TX-SV303PRO

Ref. No. 3437

ONKYO SERVICE MANUAL

QUARTZ SYNTHESIZED TUNER AMPLIFIER

MODEL TX-SV303PRO

Black model

BHMD, BHMDN, BHUD, BHUDN	120V AC, 60Hz

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS INDENTIFIED BY MARK ⚠ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

ONKYO®
AUDIO COMPONENTS

SPECIFICATIONS

AMPLIFIER SECTION

Power Output:	Stereo mode 80 watts per channel min. RMS. at 8 ohms, both channels driven, from 20Hz to 20,000Hz, with no more than 0.08% total harmonic distortion. Surround/Multi mode 75 watts per channel min. RMS. at 8 ohms both channels driven, from 20Hz to 20,000Hz, with no more than 0.08% total harmonic distortion. (FRONT) 12 watts per channel min. RMS. at 8 ohms 1,000Hz with no more than 0.8% total harmonic distortion. (REAR or REMOTE)	
Total Harmonic Distortion:	0.08% at rated power (FRONT)	
IM Distortion:	0.08% at rated power (FRONT)	
Damping Factor:	60 at 8 ohms (FRONT)	
Sensitivity and Impedance:	Phono:	2.5mV/50 kohms
	CD/Tape Play:	150mV/50 kohms
	Tape Rec:	150mV/2.2 kohms
	Pre out (CENTER):	1V, 2.2 kohms
Phono Overload:	120mV RMS. at 1,000 Hz, 0.08 % THD.	
Frequency Response:	20 to 30,000 Hz, +/–1 dB	
RIAA Deviation:	20 to 20,000 Hz, +/–0.8 dB	
Tone Control:	BASS:	+/–10 dB at 100 Hz
	TREBLE:	+/–10 dB at 10,000 Hz
Signal to Noise Ratio:	PHONO:	80 dB (IHF A, 5mV input)
	CD/TAPE:	100 dB (IHF A)
Muting:	– ∞ dB	

VIDEO SECTION

Signal sensitivity and impedance
VDP/VCR normal Input, output: 1 Vp-p, 75 ohms

TUNER SECTION

FM:

Tuning Range:	87.5 – 108.0MHz (100kHz steps)	
Usable Sensitivity:	Mono:	11.2dBf, 2.0µV
	Stereo:	17.2dBf, 4.0µV
50dB Quieting Sensitivity:	Mono:	17.2dBf, 4.0µV
	Stereo:	37.2dBf, 40µV
Capture Ratio:	1.5dB	
Image Rejection Ratio:	40dB	
IF Rejection Ratio:	90dB	
Signal-to-Noise Ratio:	Mono:	73dB
	Stereo:	67dB
Alternate Channel Attenuation:	55dB	
AM Suppression Ratio:	50dB	
Total Harmonic Distortion:	Mono:	0.15%
	Stereo:	0.25%
Frequency Response:	30 – 15,000Hz ±1.5dB	
Stereo Separation:	45dB at 1kHz/30dB at 100 – 10,000Hz	
Muting Level:	17.2dBf, 4µV	

AM:

Tuning Range:	530 – 1710kHz (10kHz steps)
Usable Sensitivity:	30µV
Image Rejection Ratio:	40dB
IF Rejection Ratio:	40dB
Signal-to-Noise Ratio:	40dB
Total Harmonic Distortion:	0.7%

GENERAL

Power Supply:	AC120V, 60Hz
Dimensions (W x H x D):	455 x 140 x 331.5 mm 17-15/16" x 5-7/8" x 13-1/16"
Weight:	9.9kg (21.8lbs)

Specifications and features are subject to change without notice.

SERVICE PROCEDURES

1. Replacing the fuses

For continued protection against fire hazard, replace only with same type and same rating fuse.

Circuit no.	Part no.	Description
F901	252051	⚠6A ST-6,Primary fuse
F904, F905	252051	6A ST-6,Secondary fuse

2. Change of FM/AM band step.

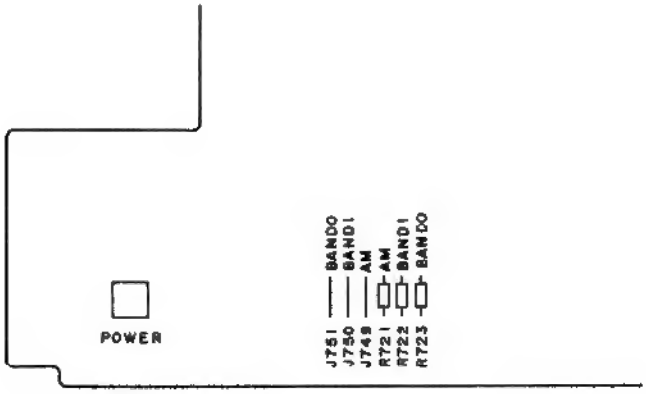
(FM)

BAND STEP	R723	J751
100kHz→50kHz	Addition	Open
50kHz→100kHz	Eliminated	Short

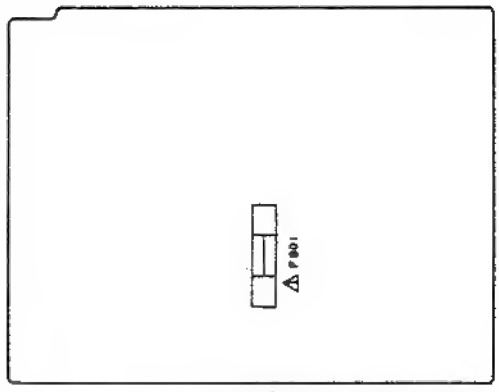
(AM)

BAND STEP	R721	J749
10kHz→ 9kHz	Eliminated	Short
9kHz→10kHz	Addition	Open

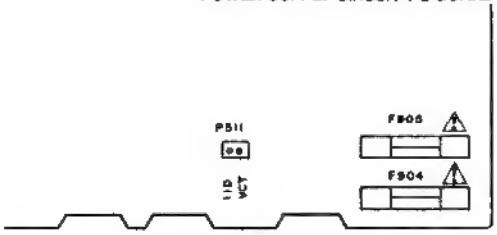
In R721 and R723 Carbon resistor 100kΩ (Part No.417341044) are used.



DISPLAY CIRCUIT PC BOARD



POWER SUPPLY CIRCUIT PC BOARD



SELECTOR AND POWER AMPLIFIER PC BOARD

3. Memory preservation

This unit does not require memory preservation batteries. A built-in memory power back-up system preserves contents of the memory during power failures and even when the unit is unplugged. The unit must be plugged in and the power switch turned on and off once in order to charge the back-up system. Note that since this is not a permanent memory the power switch must be turned on and off a few times each month to keep the back-up system operative. The period of time during which memory contents are preserved after power has last been turned off varies depending on climate and placement of the unit. On the average, memory contents are protected over a period of 3 to 4 weeks (a minimum of 2 weeks) after the last time power has been turned off. This period is shorter when the unit is exposed to very high humidity or used in an area with an extremely humid climate.

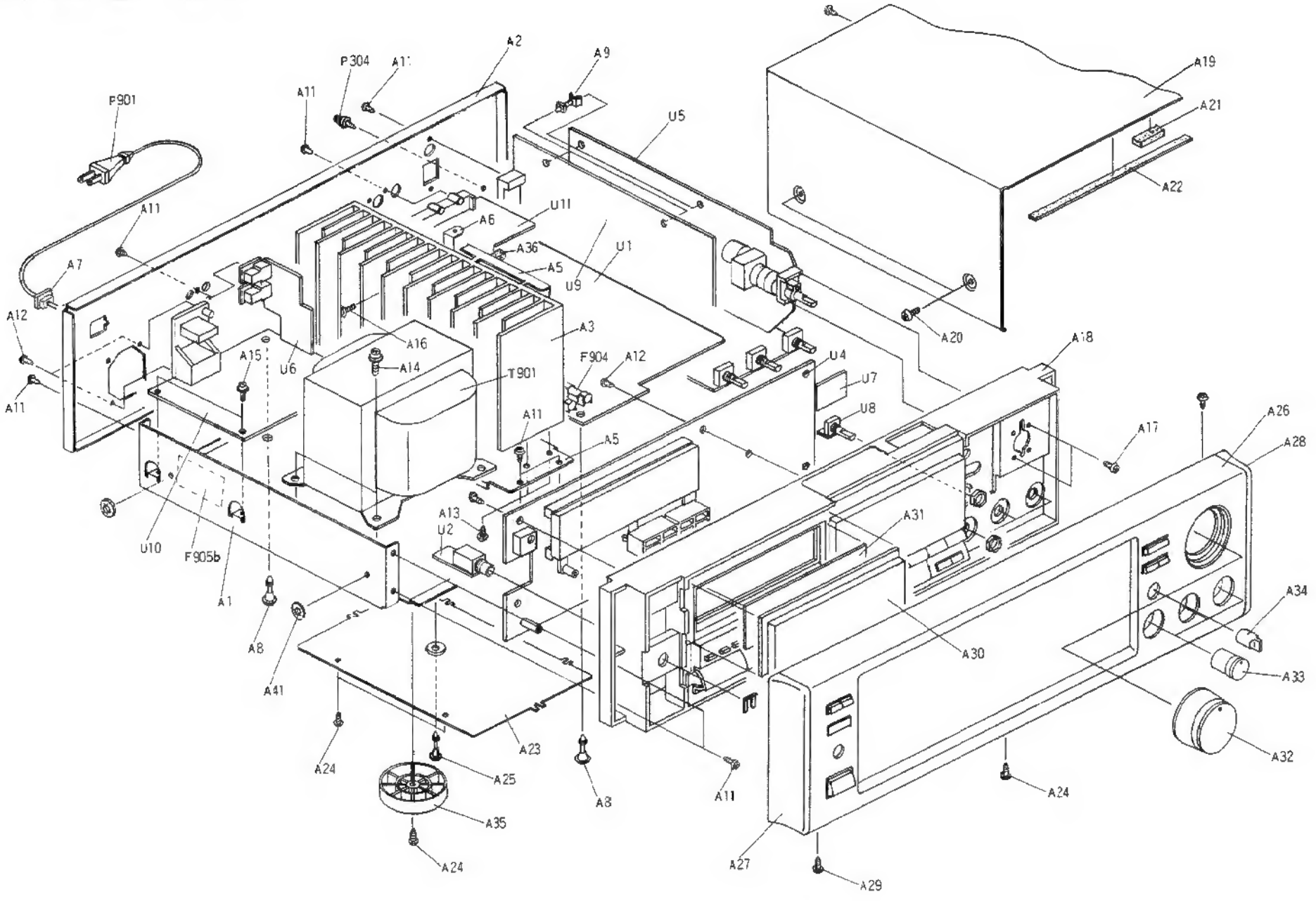
4. Safety-check out

(Only U.S.A. model)

After correcting the original service problem perform the following safety check before releasing the set to the customer.

Connect the insulating-resistance tester between the plug of power supply cord and terminal GND on the back panel. Specifications: 3.3 Mohm ±10% at 500V.

EXPLODED VIEW



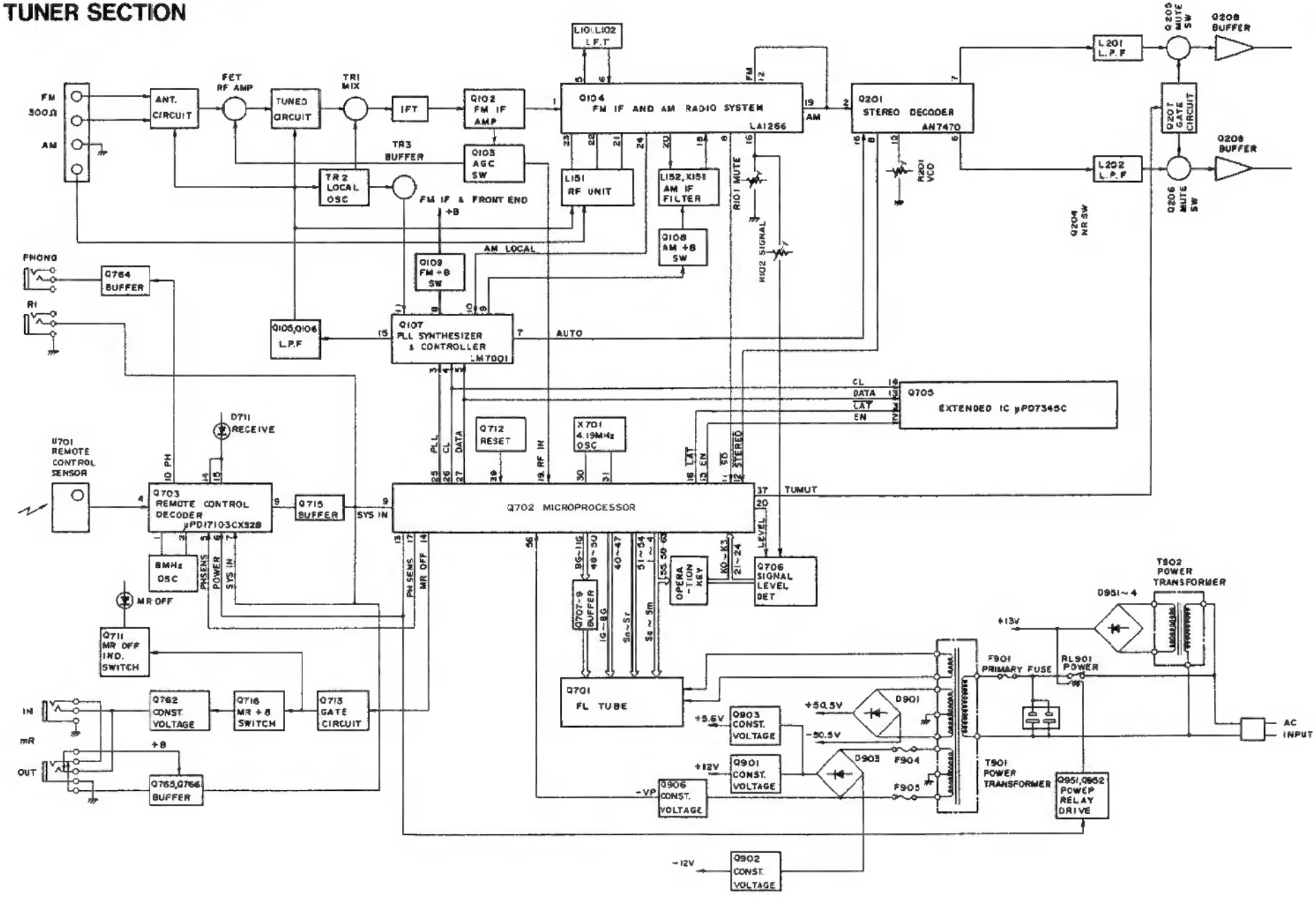
PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
A1	27100239AY	Chassis
A2	27121616Y	Rear panel
A3	27160287	Radiator
A4	27141474AY	Bracket SH
A5	27130653Y	Bracket H
A6	27141498Y	Bracket S
A7	27300750	⚠ Bushing
A8	27190657	KGLS-18RT,Holder
A9	27190062	KGLS-12S,Holder
A10	801433	3SMS10W.SW+14B(BC),Sems self-tapping screw
A11	834430088	3TTS+8B(BC),Self-tapping screw
A12	833430080	3TTP+8B(BC),Self-tapping screw
A13	834430108	3TTS+10B(BC),Self-tapping screw
A14	830440089	4TTC+8C(BC),Self-tapping screw
A15	831130088	3TTW+8B,Self-tapping screw
A16	82143015	3P+15FN(BC),Pan head screw
A17	82143006	3P+6FN(BC),Pan head screw
A18	27110718Y	Front bracket ass'y
A19	28184476AY	Top cover
A20	834430088	3TTS+8B(BC),Self-tapping screw
A21	28141132	6×60×40,Cushion
A22	28141132	0.5×390×14,Cushion
A23	27170280AY	Bottom panel
A24	834430088	3TTS+8B(BC),Self-tapping screw
A25	27190657	KGLS-18RT,Holder
A26	1A377701K	Front panel ass'y
A27	28125234BY	End cap L
A28	28125235BY	End cap R
A29	833430080	3TTP+8B(BC),Self-tapping screw
A30	28191596A	Clear plate
A31	28133262Y	Back plate
A32	28324372	Knob VOLUME
A33	28324376A	Knob TONE
A34	28324378	Knob IB
A35	27175251 or 27175251-1	Leg

REF. NO.	PART NO.	DESCRIPTION
F901	252051	⚠ 6A ST-6,Primary fuse
F904	252051	⚠ 6A ST-6,Secondary fuse
F905	252051	⚠ 6A ST-6,Secondary fuse
F905b	29360626-1	Rating label, fuse
JL701	2041322010	NCFC1-322010,Flat cable
P304	25060044	Terminal GND
P901	253163Y or 253174Y	⚠ AS-UC-6 #18, ⚠ Power supply cord
Q505,Q506	2201653, 2201654, 2201655, 2202272 or 2202273	2SC3856-O, 2SC3856-Y, 2SC3856-P, 2SC3907-R or 2SC3907-O,Power amplifier transistors
Q507,Q508	2201663, 2201664, 2201665, 2202262 or 2202263	2SA1492-O, 2SA1492-Y, 2SA1492-P, 2SA1516-R or 2SA1516-O,Power amplifier transistors
T901	2300666	⚠ NPT-1110D,Power transformer
U1	1A377587-5	NAAF-4187-5,Selector and power amplifier pc board ass'y
U2	1A377588-5	NAETC-4188-5,Headphone terminal pc board ass'y
U4	1A377589-5	NADIS-4189-5,Display circuit pc board ass'y
U5	1A377590-5	NAAF-4190-5,Volume circuit pc board ass'y
U6	1A377591-5	NADG-4191-5,RI/MR terminal pc board ass'y
U7	1A377592-5	NASW-4192-5,Operation switch pc board ass'y
U8	1A377593-5	NAETC-4193-5,Input balance volume pc board ass'y
U9	1A377594-5	NARF-4194-5,Tuner circuit pc board ass'y
U10	1A377595-5	NAPS-4195-5,Power supply circuit pc board ass'y
U11	1A377596-5	NAAF-4196-5,Video and sub amplifier pc board ass'y

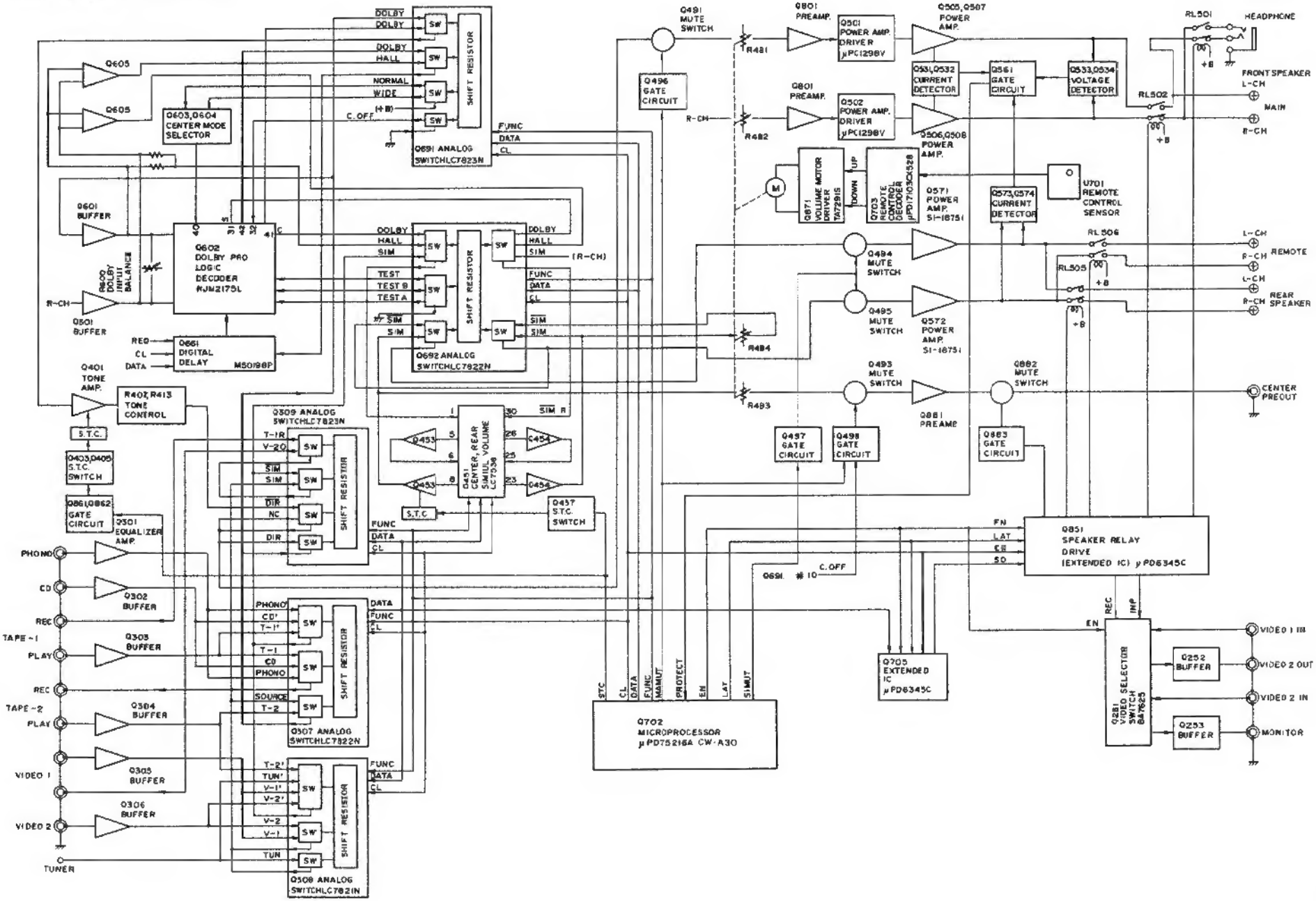
NOTE:
THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

BLOCK DIAGRAM
TUNER SECTION

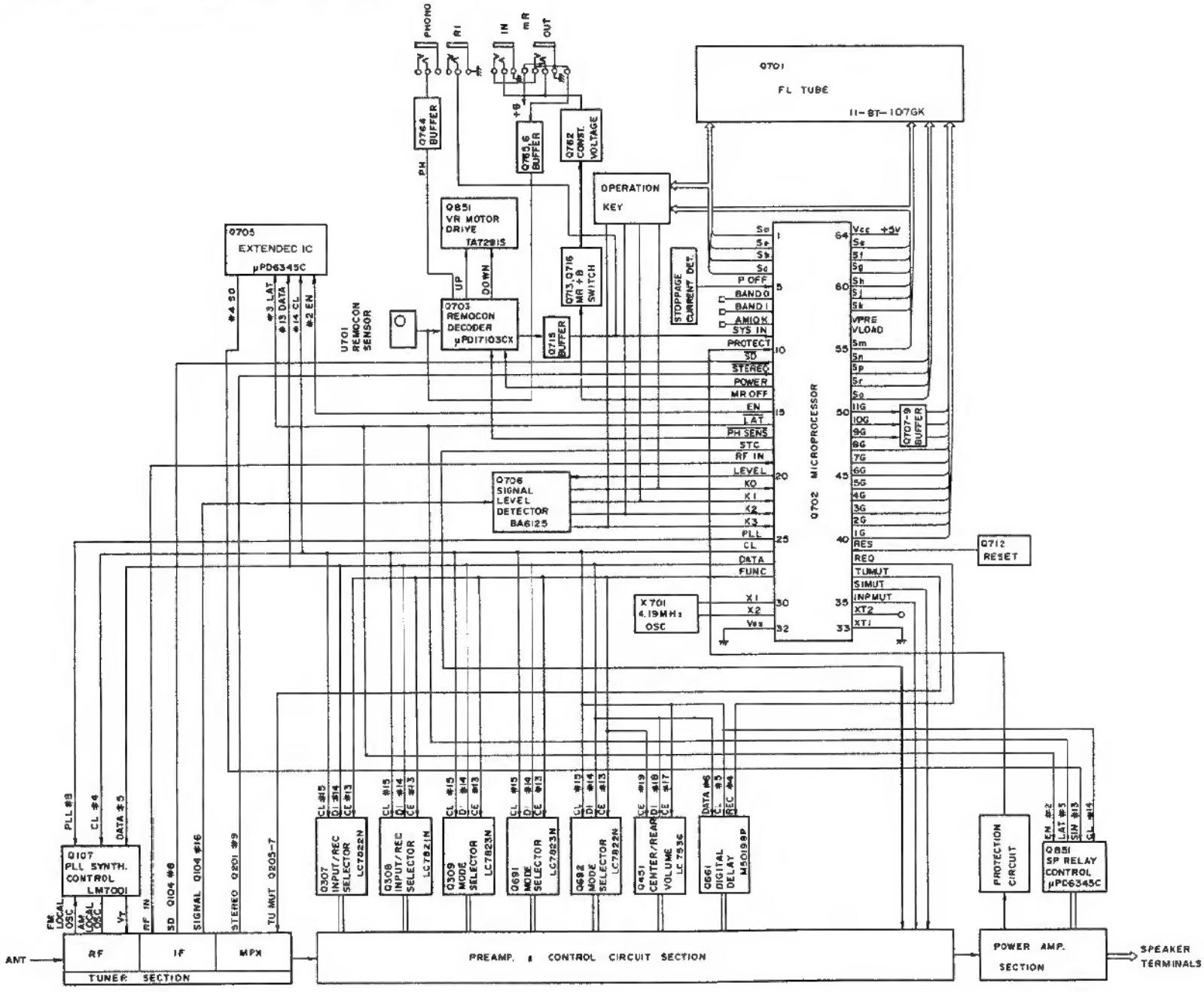


BLOCK DIAGRAM

AMPLIFIER SECTION



MICROPROCESSOR DESCRIPTIONS



Terminal Description

<table>
<tr><th>Pin No.</th><th>Symbol</th><th>Description</th></tr>
<tr><td>1</td><td>Sd</td><td rowspan="4">Segment and key scan output terminals.
"H" when active.</td></tr>
<tr><td>2</td><td>Sc</td></tr>
<tr><td>3</td><td>Sb</td></tr>
<tr><td>4</td><td>Sa</td></tr>
<tr><td>5</td><td>POFF</td><td>This is the input terminal for detection of the stoppage of electric current."L" when the stoppage of electric current.</td></tr>
<tr><td>6</td><td>BAND0</td><td rowspan="2">Initializing input terminal for region setting of FM band.</td></tr>
<tr><td>7</td><td>BAND1</td></tr>
<tr><td>8</td><td>AM 10K</td><td>Initializing input terminal for region setting of AM band.</td></tr>
<tr><td>9</td><td>SYS IN</td><td>System code input terminal."H" when active.</td></tr>
<tr><td>10</td><td>PROTECT</td><td>Protection circuit operation detection input terminal. "H" when active.</td></tr>
<tr><td>11</td><td>SD</td><td>Broadcast detection input terminal."L" when active.
Control the stop of auto tuning and output TU MUT(#37).</td></tr>
<tr><td>12</td><td>STEREO</td><td>Stereo broadcast detection input terminal.
"L" when stereo broadcast.</td></tr>
<tr><td>13</td><td>POWER</td><td>Power control output terminal."H" when the power turns on.</td></tr>
<tr><td>14</td><td>MR</td><td>MR control output terminal. "H" when MR turns on.</td></tr>
<tr><td>15</td><td>EN</td><td>Connect the terminal EN of the extended IC μPD6345C.(Q705,Q851)</td></tr>
<tr><td>16</td><td>LAT</td><td>Connect the terminal LAT of the extended IC μPD6345C.</td></tr>
<tr><td>17</td><td>PHONO</td><td>Phono control output terminal.</td></tr>
<tr><td>18</td><td>S.TONE</td><td>SELECTIVE TONE control output terminal.
"H" when this switch turns on.</td></tr>
<tr><td>19</td><td>RF IN</td><td>RF mode input terminal.
<table>
<tr><td>RF IN</td><td>RF MODE</td></tr>
<tr><td>L</td><td>LOCAL</td></tr>
<tr><td>H</td><td>DX</td></tr>
</table>
Control the terminals LOCAL and DX of the extended IC.</td></tr>
<tr><td>20</td><td>LEVEL</td><td>Signal level input control output terminal.The signal level is inputed to terminals K0-K3 when this terminal is the high level.</td></tr>
<tr><td>21
22
23
24</td><td>K0
K1
K2
K3</td><td>Key scan input terminals when pin 20 is low."H" when active.
Signal level input terminal when pin 20 is high.
<table>
<tr><td>Key input of L</td><td>Signal level</td></tr>
<tr><td>none</td><td>LEVEL0</td></tr>
<tr><td>K0</td><td>LEVEL1</td></tr>
<tr><td>K0,K1</td><td>LEVEL2</td></tr>
<tr><td>K0,K1,K2</td><td>LEVEL3</td></tr>
<tr><td>K0,K1,K2,K3</td><td>LEVEL4</td></tr>
</table></td></tr>
<tr><td>25</td><td>PLL</td><td>Connect to the terminal CE of PLL IC (LM7001 Q107).</td></tr>
<tr><td>26</td><td>CL</td><td>Connect to the terminal CL of PLL IC,terminal CL of analogue switches(Q307,308, Q309,Q601,Q692),terminal SECK of digital delay (Q661) and terminal CLK of electro volume. (Q451)</td></tr>
<tr><td>27</td><td>DATA</td><td>Connect to the terminal DATA of PLL IC,terminal DI of analogue switches,terminal SEDATA of digital delay,terminal SIN of extended IC and terminal CLK of electro volume. (Q451)</td></tr>
</table>

FM band setting

BAND1	BAND0	REGION	FREQUENCY RANGE	CH. SPACE
0	0	U.S.A.	87.5-108.0MHz	50kHz
0	1	Europe	87.50-108.00MHz	50kHz
1	0	Saudi Arabia	87.50-108.00MHz	50kHz
1	1	Japan	76.0-90.0MHz	100kHz

AM band setting

AM10K	REGION	FREQUENCY RANGE	CH. SPACE
1	U.S.A.	530-1710kHz	10kHz
0	Saudi Arabia	531-1602kHz	9kHz
0	Europe	522-1611kHz	9kHz

Pin No.	Symbol	Description
28	CE	Connect to the terminal CE of analogue switches and terminal CE of electro volume.
29	LED	LED indicator control output terminal.
30	X1	Ceramic oscillator connection terminal for main system clock.
31	X2	Connect to the 4.19MHz ceramic oscillator.
32	VSS	Ground terminal.
33	XT1	Ceramic oscillator connection terminal for sub system clock.
34	XT2	Not used.
35	INP MUT	Audio muting output terminal when input selector change over.
36	SIM MUT	SIM muting output terminal when input selector change over.
37	TU MUT	Tuner muting output terminal."H" when active.
38	REQ/MODE	Connect to the terminal REQ of digital delay.
39	RESET	Reset input terminal."L"when active.
40	D1	Digit output terminals."H" when active.
41	D2	
42	D3	
43	D4	
44	D5	
45	D6	
46	D7	
47	D8	
48	D9	
49	D10	
50	D11	
51	So	Segment output terminals."H" when active.
52	Sr	
53	Sp	
54	Sn	
55	Sm	
56	VLOAD	Pull-down resistor connection terminal of FIP controller/driver.
57	VPRE	Power supply terminal of output buffer of FIP controller/driver.
58	Sk	Segment and key scan output terminals. "H" when active.
59	Sj	
60	Sh	
61	Sg	
62	Sf	
63	Se	
64	VDD	Power supply terminal.(+5V)

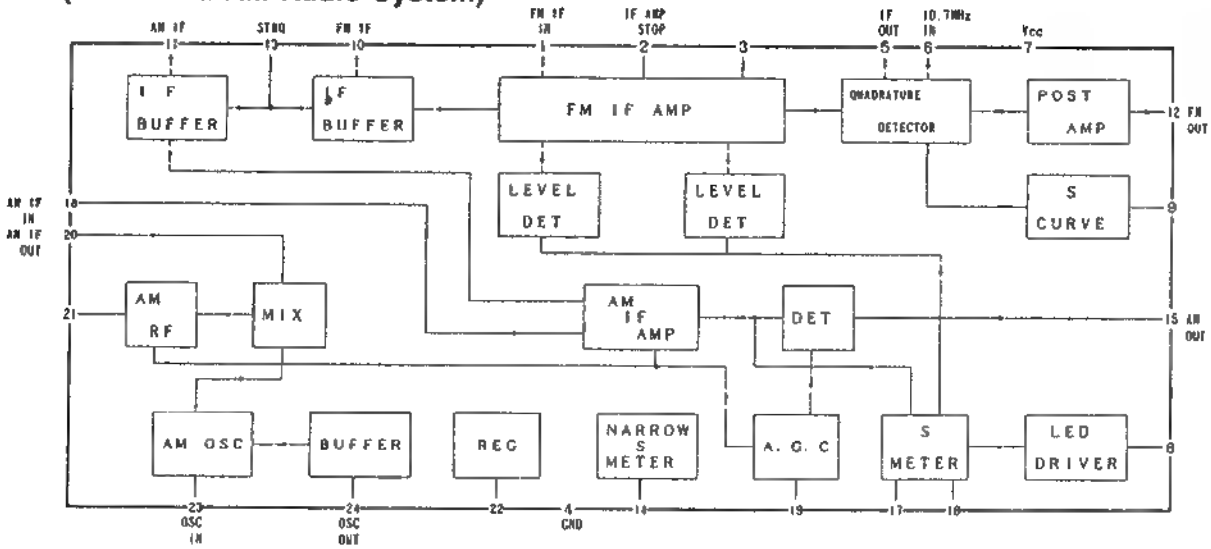
Key Matrix

	No.	24	23	22	21
No.		K3	K2	K1	K0
4	Sa	SLEEP	SPEAKER REMOTE	SPEAKER MAIN	POWER
3	Sb	DELAY TIME	SURROUND MODE	CENTER MODE	MR
2	Sc	TAPE-2	TAPE-1	VIDEO-2	VIDEO-1
1	Sd	CD	PHONO	AM	FM
63	Se		S.DIRECT	SIM	REC OUT
62	Sf	4	3	2	1
61	Sg	8	7	6	5
60	Sh	CLASS SCAN	D.TUNING	0	9
59	Sj	UP	DOWN	MEMORY	MUTE/MODE
58	Sk	CLASS-D	CLASS-C	CLASS-B	CLASS-A
55	Sm	CENTER OFF	SELECTIVE TONE	CLASS-F	CLASS-E

IC BLOCK DIAGRAMS AND DESCRIPTIONS

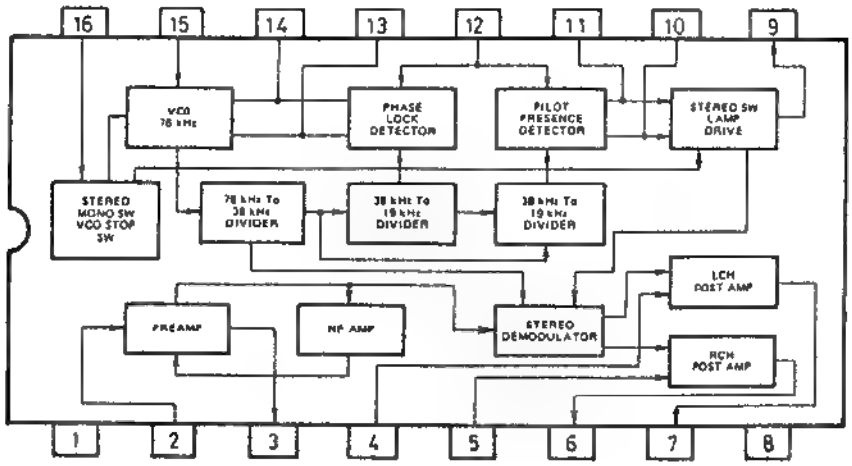
Q104

LA1266 (FM IF and AM Radio System)



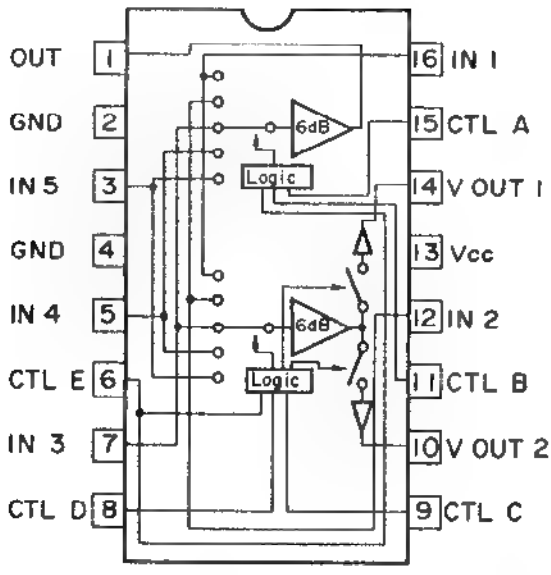
Q201

AN7470 (FM Stereo Decoder)



Q251

BA7625 (Video Selector Switch)



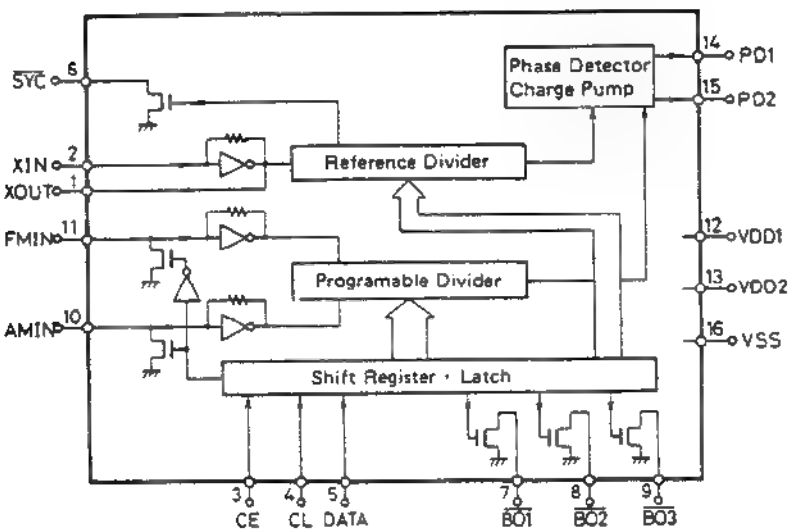
#15	#11	#6	#1
A	B	■	MONITOR OUT
L	L	X	IN1
H	L	X	IN2
L	H	X	IN3
H	H	L	IN4
H	H	H	IN5

X:Don't care

#9	#8	#6	#14
C	D	E	VOUT 1
L	L	X	
H	L	X	IN2
L	■	X	IN3
H	H	L	IN4
H	H	H	IN5

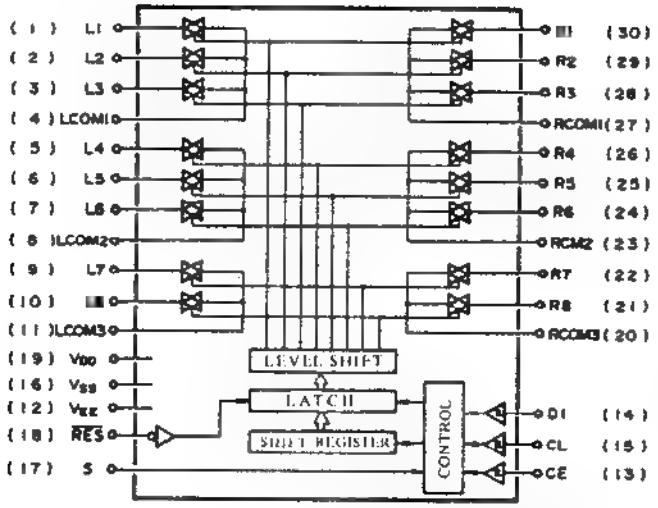
#15	#11	#6	#10
A	■	E	VOUT 2
L	L	X	IN1
H	L	X	
L	H	X	IN3
H	H	L	IN4
H	H	H	IN5

Q107
LM7001 (PLL Synthesizer and Controller)



Pin No.	Terminal	Description
1	XOUT	Connect to the 7.2 MHz crystal oscillator.
2	XIN	
3	CE	Chip enable terminal. Connect to the PLL terminal of microprocessor.
4	CL	Serial clock input terminal. Connect to the CLOCK terminal of microprocessor.
5	DATA	Serial data input terminal. Connect to the DATA terminal of microprocessor.
6	$\overline{SYN}$	Not used.
7	$\overline{AUTO/MONO}$	AUTO/MONO selection output terminal. "L" when AUTO.
8	$\overline{FM}$	FM band control output terminal. "L" when FM.
9	$\overline{AM}$	AM band control output terminal. "L" when AM.
10	AMIN	AM local oscillator input terminal.
11	FMIN	FM local oscillator terminal.
12	$V_{DD}1$	Power supply terminal for back-up.
13	$V_{DD}2$	Power supply terminal.
14	PD1	Charge pump output of the phase detector which constitutes the PLL. High level is output when the divided local oscillator frequency is high than the reference frequency. In the opposite case, low level is output. Floating occurs when the frequencies matched. The output is applied to the variable capacitor diode in the local oscillator through the low pass filters.
15	PD2	
16	Vss	Ground terminal.

Q307, Q692
LC7822N (Analogue switch)



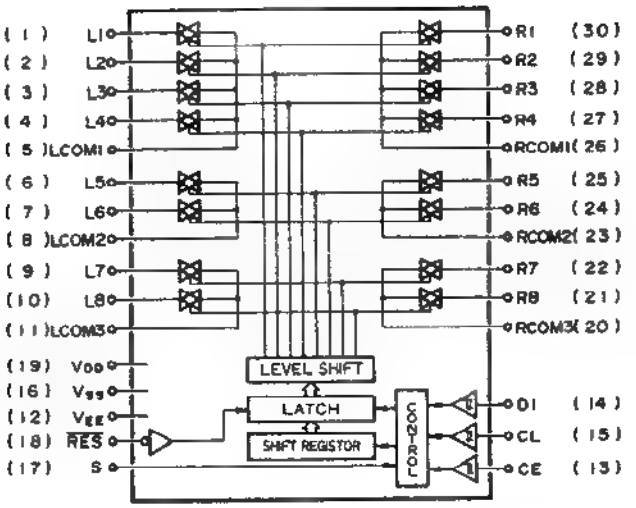
Q307

Pin No.	Terminal	Description	Pin No.	Terminal	Description
1	PHONO'		16	Vss	Ground terminal.
2	CD'		17	S	Selector terminal
3	TAPE-1		18	RES	Reset terminal.When power is turned on,the condition of the analog switch is not detrmined,but when this terminal iS "L",all analog switches are off.
4	L COM 1	Input/output terminals of audio signal			
5	TAPE-1	of left channel.			
6	CD	Control to the inside analogue switch			
7	PHONO	at the serial data.			
8	L COM 2		19	VDD	Power supply terminal.(+15V)
9	SOURCE		20	R COM 3	
10	TAPE-2		21	TAPE-2	
11	L COM 3		22	SOURCE	
12	Vss	Negative power supply terminal. (-15V)	23	R COM 2	Input/output terminals of audio signal
			24	PHONO	of right channel.
13	CE	Chip enable terminal.Connect the terminal SEL of microprocessor.	25	CD	Control to the inside analogue switch
			26	TAPE-1	at the serial data.
14	DI	Serial data input terminal.Connect the terminal DATA of microprocessor.	27	R COM 1	
			28	TAPE-1'	
15	CL	Serial clock input terminal.Connect the terminal CLOCK of microprocessor.	29	CD'	
			30	PHONO'	

Q692

Pin No.	Terminal	Description	Pin No.	Terminal	Description
1	DOLBY	Input/output terminals of audio signal	16	Vss	Ground terminal.
2	HALL	of right channel when surround mode.	17	S	Selector terminal
3	SIM	Control the inside analogue switch	18	RES	Reset terminal.When power is turned on,the condition of the analog switch is not detrmined,but when this terminal iS "L",all analog switches are off.
4	L COM 1	at the serial data.			
5	TEST	Not used.			
6	TEST B				
7	TEST A				
8	L COM 2		19	VDD	Power supply terminal.(+15V)
9	SIM	Input/output terminals of audio signal	20	R COM 3	Input/output terminals of audio signal
10	SIM	of centert channel when mode SIM.	21	SIM	of right channel when mode SIM.
11	L COM 3		22	SIM	
12	Vss	Negative power supply terminal. (-15V)	23	R COM 2	Dolby pro logic control signal.
			24	TEST A	Control the inside analogue switch
13	CE	Chip enable terminal.Connect the terminal SEL of microprocessor.	25	TEST B	at the serial data.
			26	TEST	
14	DI	Serial data input terminal.Connect the terminal DATA of microprocessor.	27	R COM 1	Input/output terminals of audio signal
			28	SIM	of left channel when surround mode.
15	CL	Serial clock input terminal.Connect the terminal CLOCK of microprocessor.	29	HALL	Control to the inside analogue switch
			30	DOLBY	at the serial data.

Q308
LC7821N (Analogue switch)



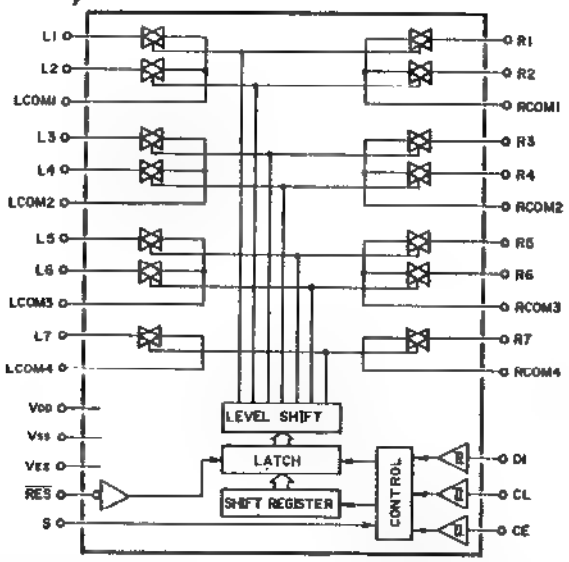
Q308

Pin No.	Terminal	Description
1	TAPE-2'	Input/output terminals of audio signal of right channel. Control to the inside analogue switch at the serial data.
2	TUNER'	
3	VIDEO-1'	
4	VIDEO-2'	
5	L COM 1	
6	VIDEO-2	
7	VIDEO-1	
8	L COM 2	
9	TUNER	
10	OFF	
11	L COM 3	
12	Vss	Negative power supply terminal. (-15V)
13	CE	Chip enable terminal.Connect the terminal SFL of microprocessor.
14	DI	Serial data input terminal.Connect the terminal DATA of microprocessor.
15	CL	Serial clock input terminal.Connect the terminal CLOCK of microprocessor.
16	Vss	Ground terminal.
17	S	Selector terminal
18	RES	Reset terminal.When power is turned on,the condition of the analog switch is not detrmined,but when this terminal iS "L",all analog switches are off.
19	VDD	Power supply terminal.(+15V)
20	L COM 3	Input/output terminals of audio signal of left channel. Control to the inside analogue switch at the serial data.
21	OFF	
22	TUNER	
23	L COM 2	
24	VIDEO-1	
25	VIDEO-2	
26	L COM 1	
27	VIDEO-2'	
28	VIDEO-1'	
29	TUNER'	
30	TAPE-2'	

Serial Data Composition

	A0	A1	A2	A3	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	
	Address				Switch change over								
Q306	0	1	0	1	TAPE-2'	TUNER'	VIDEO-1'	VIDEO-2'	VIDEO-2	VIDEO-1	TUNER		
Q307	0	[redacted]	1	1	PHONO'	CD'	TAPE-1'	TAPE-1	CD	PHONO	SOURCE	TAPE-2	
Q309	0	1	1	1	TAPE-1	VIDEO-2	SIM	SIM	DIRECT		DIRECT		
Q691	1	1	1	1	DOLBY	DOLBY	DOLBY	HALL	NORMAL	WIDE	CENTER OFF		TX-906
Q692	1	0	1	1	DOLBY	HALL	SIM	TEST	TESTA	TESTB	SIM	SIM	TX-906

Q309, Q691
LC7823N (Analogue switch)



Q309

Pin No.	Terminal	Description
1	TAPE-1 REC	Recording output terminals.Control the analogue switch at the serial data.
2	VIDEO-2 OUT	
3	L COM 1	
4	SIM	Input/output terminals of audio signal of left channel when surround mode. Control the inside analogue switch at the serial data.
5	SIM	
6	L COM 2	
7	DIRECT	
8	NC	
9	L COM 3	
10	DIRECT	
11	L COM 4	
12	Vss	Negative power supply terminal. (-15V)
13	CE	Chip enable terminal.Connect the terminal SEL of microprocessor.
14	DI	Serial data input terminal.Connect the terminal DATA of microprocessor.
15	CL	Serial clock input terminal.Connect the terminal CLOCK of microprocessor.

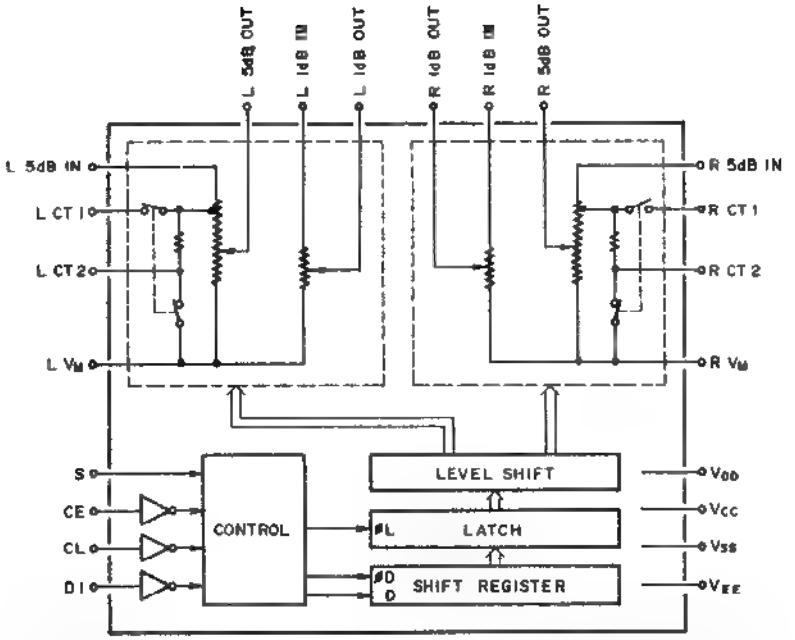
Pin No.	Terminal	Description
16	Vss	Ground terminal.
17	S	Selector terminal
18	RES	Reset terminal.When power is turned on,the condition of the analog switch is not detrmined,but when this terminal iS "L",all analog switches are off.
19	VDD	Power supply terminal.(+15V)
20	R COM 4	Input/output terminals of audio signal of right channel when surround mode. Control to the inside analogue switch at the serial data.
21	RIRECT	
22	R COM 3	
23	NC	
24	DIRECT	
25	R COM 2	
26	SIM	
27	SIM	
28	R COM 1	Recording output terminals.Control the analogue switch at the serial data.
29	VIDEO-2 OUT	
30	TAPE-1 REC	

Q691

Pin No.	Terminal	Description
1	DOLBY	Input/output terminals of audio signal of left channel when surround mode. Control the inside analogue switch at the serial data.
2	DOLBY	
3	L COM 1	
4	DOLBY	
5	HALL	
6	L COM 2	
7	NORMAL	
8	WIDE	
9	L COM 3	
10	C. OFF	
11	L COM 4	
12	Vss	Negative power supply terminal. (-15V)
13	CE	Chip enable terminal.Connect the terminal SEL of microprocessor.
14	DI	Serial data input terminal.Connect the terminal DATA of microprocessor.
15	CL	Serial clock input terminal.Connect the terminal CLOCK of microprocessor.

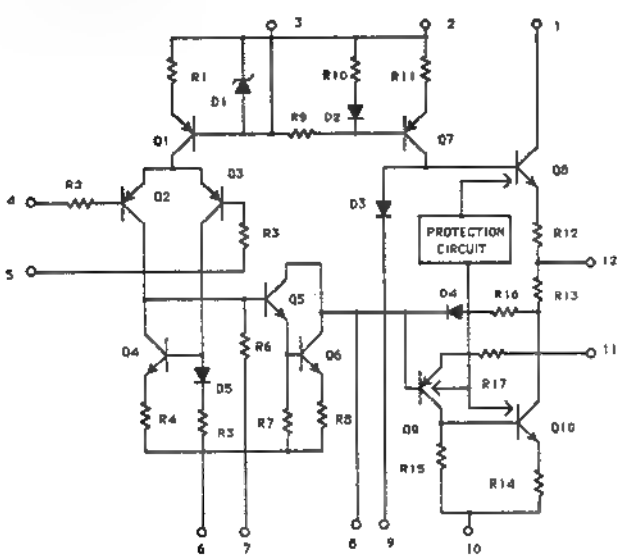
Pin No.	Terminal	Description
16	Vss	Ground terminal.
17	S	Selector terminal
18	RES	Reset terminal.When power is turned on,the condition of the analog switch is not detrmined,but when this terminal iS "L",all analog switches are off.
19	VDD	Power supply terminal.(+15V)
20	R COM 4	Input/output terminals of audio signal of right channel when surround mode. Control to the inside analogue switch at the serial data.
21	C. OFF	
22	R COM 3	
23	WIDE	
24	NORMAL	
25	R COM 2	
26	HALL	
27	DOLBY	
28	R COM 1	
29	DOLBY	
30	DOLBY	

Q451
LC7536 (Electro Volume)

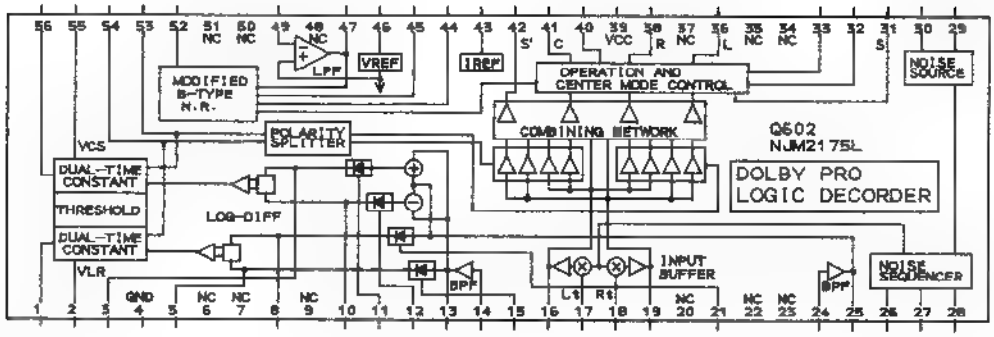


No.	TERMINAL	DESCRIPTION	No.	TERMINAL	DESCRIPTION
1	L 5dB IN	5dB step attenuator input terminal	17	CL	Serial data input terminal
3	L CT1	Terminal for loudness	18	DI	Serial data input terminal
4	L CT2	Terminal for loudness	19	CE	Serial data input terminal
5	L 5dB OUT	5dB step attenuator output terminal	21	VCC	Power supply terminal
6	L 1dB IN	1dB step attenuator input terminal	22	R VM	Common terminal of volume
8	L 1dB OUT	1dB step attenuator output terminal	23	R 1dB OUT	1dB step attenuator output terminal
9	L VM	Common terminal of volume	25	R 1dB IN	1dB step attenuator input terminal
10	VEE	Power supply terminal	26	R 5dB OUT	5dB step attenuator output terminal
12	S	Select terminal of address code during data format	27	R CT2	Terminal for loudness
13	VDD	Power supply terminal	28	R CT1	Terminal for loudness
14	VSS	Power supply terminal	30	R 5dB IN	5dB step attenuator input terminal

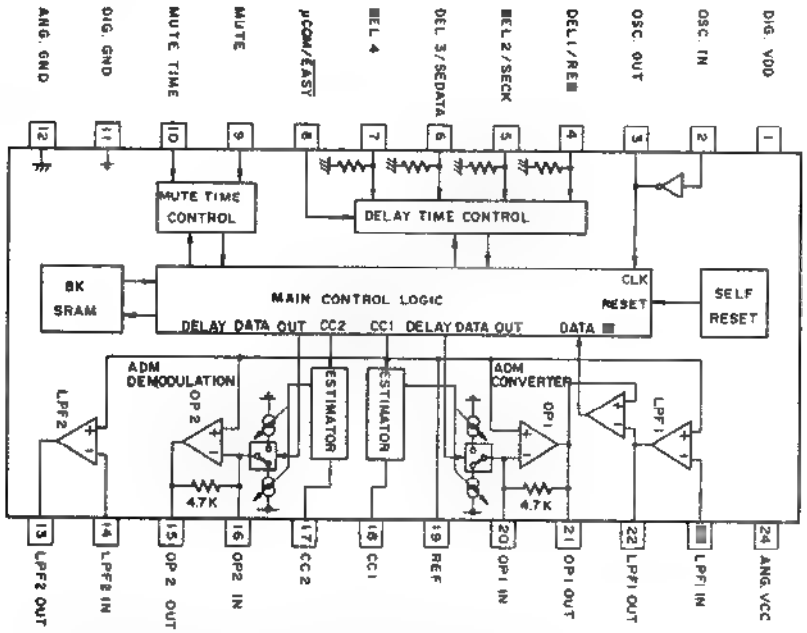
Q501, Q502
μPC1298V (Power Amplifier Driver)



Q602
NJM2175L (Dolby Pro Logic Decoder)

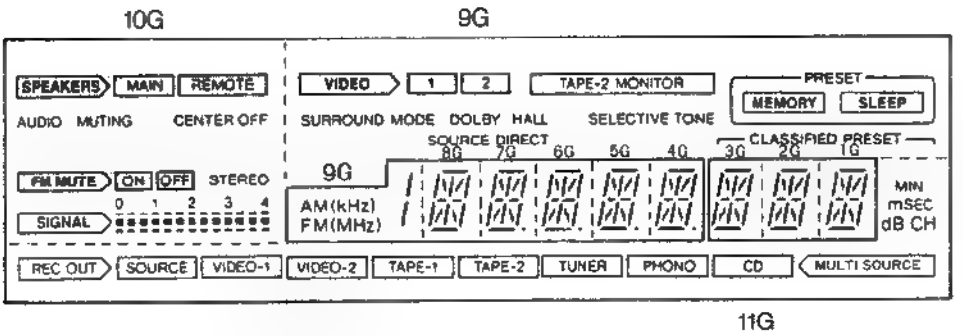


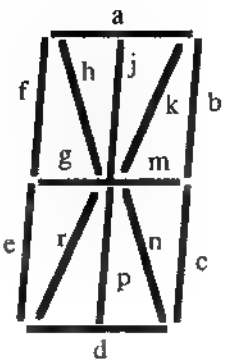
Q661
M50198P (Digital Delay)



Pin no.	Symbol	Function
1	DIG GND	Power supply terminal of digital section
2	OSC. IN	Connect the 3.27MHz ceramic oscillator or external clock.
3	OSC. OUT	
4	DEL1/REQ	Terminal DEL1 when the easy mode.Terminal REQ when the microprocessor.
5	DEL2/SECK	Terminal DEL2 when the easy mode.Terminal SECK when the microprocessor.
6	DEL3/SEDATA	Terminal DEL3 when the easy mode.Terminal SEDATA when the microprocessor.
7	DEL4	80usec. mode control terminal.
8	COM/EASY	Microprocessor or easy mode changeover terminal
9	MUTE	Manual muting control terminal.
10	MUTE TIME	Auto muting time changeover terminal.
11	DIG.GND	Digital ground
12	ANG.GND	Analog ground
13	LPF2 OUT	Connect the secondary low pass filter between pins 13 & 14.
14	LPF2 IN	
15	OP2 OUT	Operation amplifier output terminal
16	OP2 IN	Operation amplifier input terminal
17	CC2	Current control
18	CC1	Current control
19	REF	Reference voltage.(2.5V)
20	OP1 IN	Operation amplifier input terminal
21	OP1 OUT	Operation amplifier output terminal
22	LPF1 OUT	Connect the low pass filter between pins 22 and 23.
23	LPF1 IN	
24	ANG.VCC	Power supply terminal of analog section.

Q701
11-BT-107GK (Fluorescent Indicator Tube)

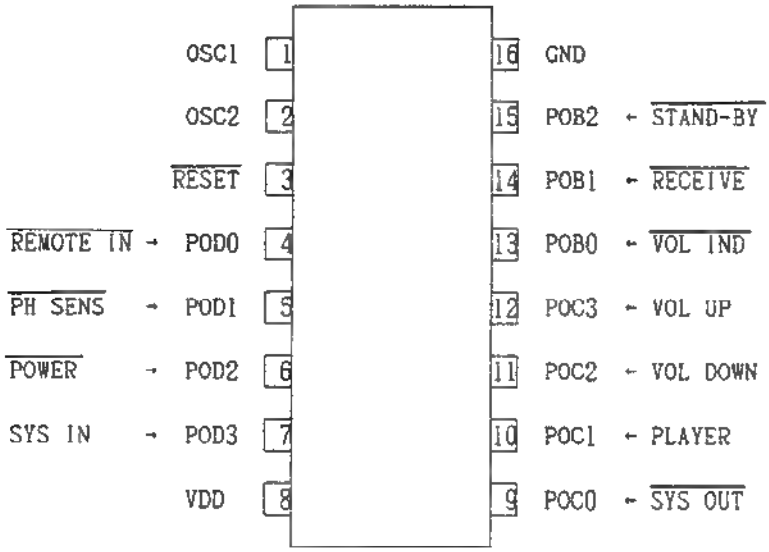




PIN NO.	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26
CONNECTION	F2	F2	NP	NP	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	NC	NP	NP	NP	NP	NP	NP
PIN NO.	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
CONNECTION	NP	NP	NP	NP	NP	NC	NC	NC	NC	NC	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G	NP	NP	F1	F1	

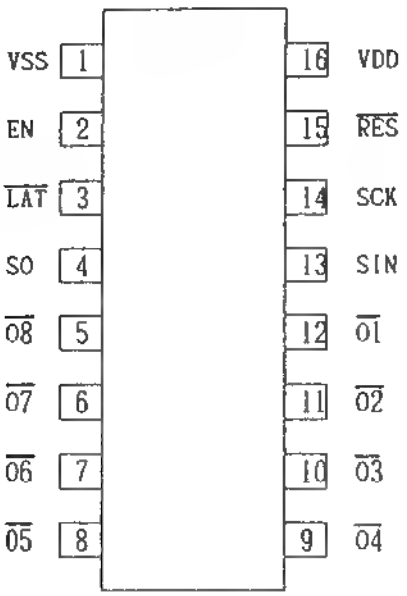
	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	dB	AUDIO MUTING	TAPE-2 MONITOR	d	d	d	d	d	d	d	d
P2	CH	REMOTE	2	c	c	c	c	c	c	c	c
P3	mSEC	MAIN	1	b	b	b	b	b	b	b	b
P4	MIN	SPEAKERS	VIDEO	a	a	a	a	a	a	a	a
P5	MULTI SOURCE	CENTER OFF	SURROUND MODE	e	e	e	e	e	e	e	e
P6	Frame of CD	FM MUTE	DOLBY	f	f	f	f	f	f	f	f
P7	Frame of PHONO	ON	HALL	g	g	g	g	g	g	g	g
P8	Frame of TUNER	OFF	SELECTIVE TONE	h	h	h	h	h	h	h	h
P9	Frame of TAPE2	STEREO	SOURCE DIRECT	j	j	j	j	j	j	j	j
P10	Frame of TAPE1	S2	MEMORY	k	k	k	k	k	k	k	k
P11	Frame of VIDEO2	B1	SLEEP	m	m	m	m	m	m	m	m
P12	Frame of VIDEO1	B2	S1	n	n	n	n	n	n	n	n
P13	Frame of SOURCE	B3	AM(kHz)	p	p	p	p	p	p	p	p
P14	REC OUT	B4	FM(MHz)	r	r	r	r	r	r	r	r
P15	S3			-	o	o	o	o	-	-	-

Q703
μPD17103CX-531 (Remote Control Decoder)

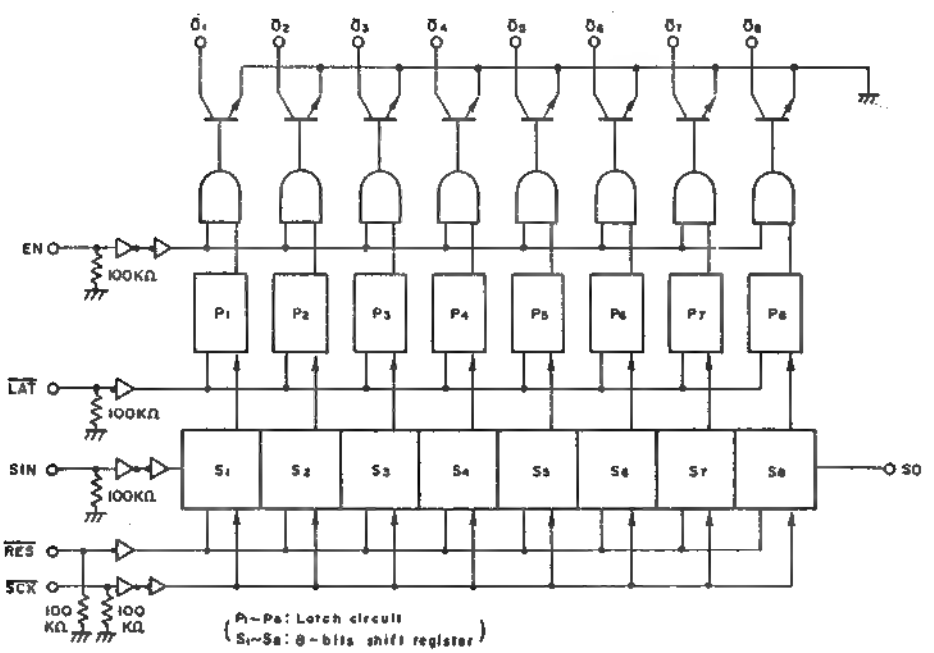


Pin No.	Symbol	Terminal	Description
1	OSC1	OSC	Connect to the 8.00MHz ceramic oscillator.
2	OSC2		
3	RES	RESET	System reset terminal. Active low.
4	POD0	REMOTE IN	Signal input terminal from preamp. for remote control. Active low.
5	POD1	PHONO SENES	Phono detection input terminal. Active low.
6	POD2	POWER	Stand-by detection input terminal. During low input, only the POWER code is decoded.
7	POD3	SYS IN	System code input terminal.
8	V_{DD}	+B	Power supply terminal.
9	POC0	SYS OUT	Output at this terminal are the custom code (16bits) remote control code input to REMOTE IN, data code (8bits), and the serial code (12bits) that has been converted corresponding to the decoded data code (8bits)
10	POC1	PLAYER	When the player PLAY/REEJECT is input, a high pulse of 200ms is output.
11	POC2	VOL DOWN	When the volume DOWN code is input, a high pulse of 120ms is output.
12	POC3	VOL UP	When the volume UP code ■ input, a high pulse of 120ms is output.
13	POB0	VOL IND	During the output of VOLUME UP/DOWN, a pulse (⌐T⌐T⌐T⌐T⌐= 250ms) is output. (Not used.)
14	POB1	RECEIVE	This is the display output for remote control reception. Output is low when decoded code is being recieved.
15	POB2	STAND-BY	STAND-BY indication terminal.
16	V_{SS}	GND	Ground terminal.

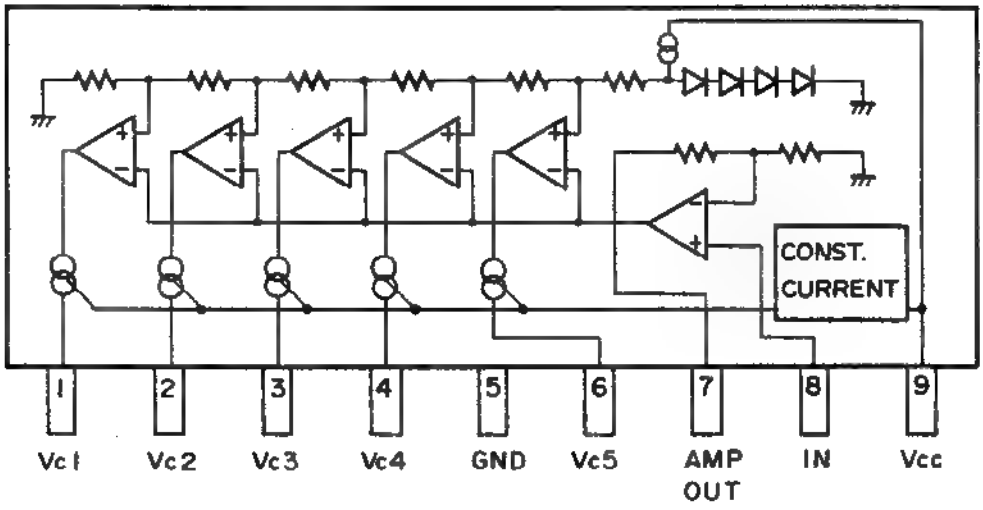
Q705, Q851
μPD6345C (Extended IC)



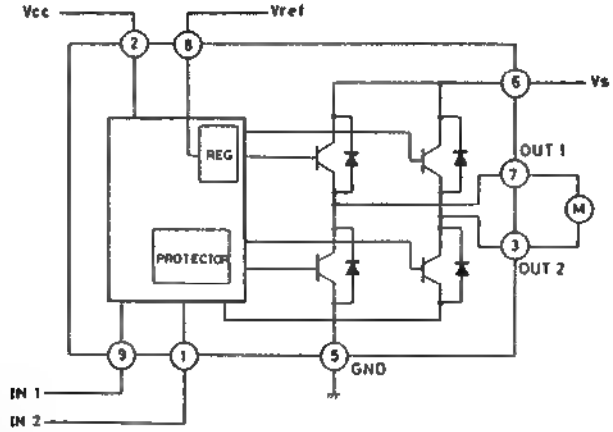
		Q705	Q851
Pin No.	Symbol	Description	Description
1	Vss	Ground terminal.	
2	EN	Chip enable input terminal.Connect to the terminal EN of the microprocessor. Active H.	
3	LAT	Latch input terminal.Connect to the terminal LAT of the microprocessor.	
4	SO	Serial data output terminal.	
5	O8	NR OFF indicator output terminal. Active low.	Headphone relay control output terminal.Active low.
6	O7	NR ON indicator output terminal. Active low.	Rear speaker relay control output terminal.Active low.
7	O6	HB OFF indicator output terminal. Active low.	Remote speaker relay control output terminal.Active low.
8	O5	HB ON indicator output terminal. Active low.	Main speaker relay control output terminal.Active low.
9	O4	LOCAL indicator output terminal. Active low.	Center preout muting control output terminal.Active low.
10	O3	DX indicator output terminal. Active low.	Not used.
11	O2	AUTO indicator output terminal. Active low.	Video selector switch control output terminal.
12	O1	MONO indicator output terminal. Active low.	Video selector switch control output terminal.
13	SIN	Serial data input terminal.Connect to the terminal DATA of the microprocessor.	
14	SCK	Serial clock input terminal.Connect to the terminal CLOCK of the microprocessor.	
15	RESET	Reset input terminal.Active L.	
16	VDD	Power supply terminal.	



Q706
BA6125 (Signal meter driver)



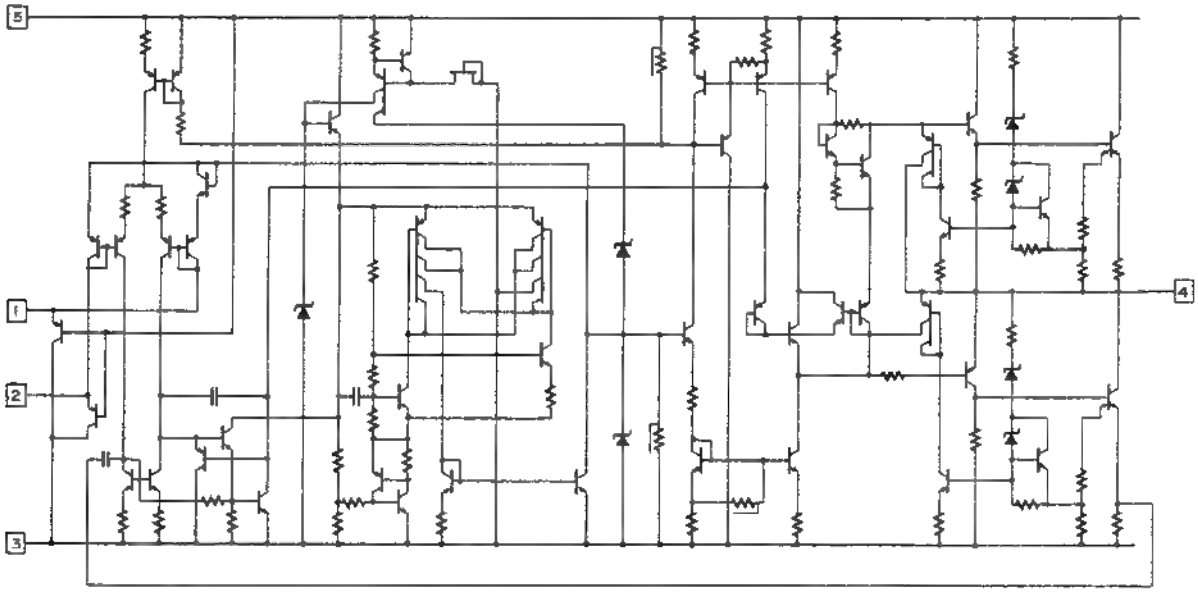
Q871
TA7291S (Volume driver)



INPUT		OUTPUT		MODE
IN 1	IN 2	OUT 1	OUT 2	
0	0	∞	∞	STOP
1	∎	∎	L	CW/CCW
∎	1	L	H	CCW/CW
1	1	L	L	BRAKE

CCW: Counter clockwise direction
CW: Clockwise direction

Q571, Q572
SI-18751 (Power amplifier)

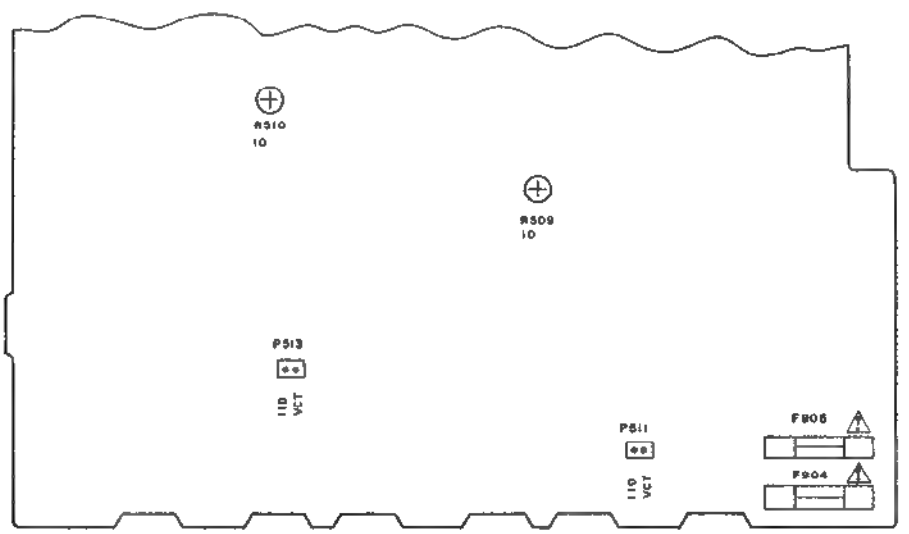


ADJUSTMENT PROCEDURES

- **Preparation**

1. Input
   FM mono: 1kHz, 75kHz devi., 60dB/μV
   FM stereo: 1kHz, 75kHz devi., 60dB/μV
   Pilot signal 19kHz 7.5kHz devi.
   AM: 400Hz 30% mod.
2. Outputs
   Connect the non-inductive type resistors of 8ohms to the main speaker, remote speaker, and rear speaker terminals unless otherwise noted.
3. Standard Knob Position

TAPE MONITOR 2 ·····OFF
VOLUME·····Maximum
BASS/TREBLE/BALANCE/INPUT
BALANCE·····Center
MUTING·····OFF
REC SELECTOR·····SOURCE
INPUT SELECTOR·····CD
SPEAKERS ·····ON
S.T.C.·····OFF
SURROUND MODE·····OFF
CENTER MODE·····WIDE
DELAY TIME·····20mS
MULTI/REAR LEVEL ·····Center



SELECTOR AND POWER AMPLIFIER PC BOARD

Amplifier section

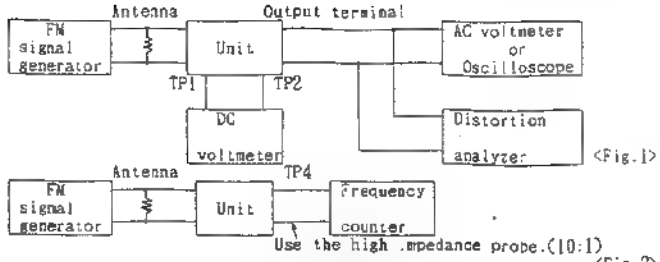
Idling Current Adjustment

Connect the DC voltmeter to the terminals IID and VCT on the pre.,and main amplifier pc board. Adjust the semi-fixed resistors R509, and R510 so that indication of voltmeter is 5±0.5mV.

NOTE: Adjust after switching on for 5 minutes.

FM section

Item	Step	Connection of instrument	FM SG output	Stereo modulator output	Tuning frequency	Output indicator	Adjustment point	Adjust for	Remarks
FM IF/RF	1	Fig. 1	99.1MHz 1kHz, 75kHz devi. 65dBf (60dB)		99.1MHz	DC voltmeter	L101	0±20mV	FM MUTE/MODE switch: ON/STEREO Repeat the steps 1 and 3 until no further adjustment is necessary.
	2					AC voltmeter	IFT on the front end	Maximum	
	3					Distortion analyzer	L102	Minimum	
VCO		Fig. 2	99.1MHz 1kHz, 75kHz devi. 65dBf (60dB)		99.1MHz	Frequency counter	R201	19kHz±10Hz	
Stereo Distortion		Fig. 3	99.1MHz, Ext mod. 65dBf (60dB)	Channel L or R 1kHz	99.1MHz	Distortion analyzer	IFT on the front end	Minimum	Don't turn more than ±180°
Stereo Separation	1	Fig. 3	99.1MHz Ext. modulation 65dBf (60dB)	Channel L 1kHz	99.1MHz	Channel R AC voltmeter	R202	Minimum	Maximum and same separation.
	2			Channel R 1kHz		Channel L AC voltmeter		Minimum	
Muting Level		Fig. 3	99.1MHz 17.2dBf(12dB)		99.1MHz	AUTO indicator	R101	Light on	
Signal Level		Fig. 3	99.1MHz 35dBf(30dB)		99.1MHz	4th Signal indicator	R102	Light on	

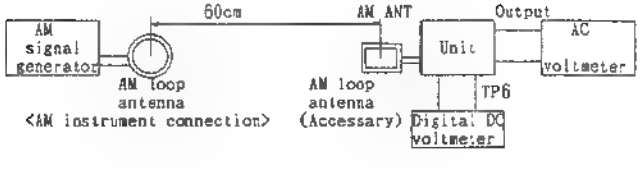


<Fig.3>

AM section

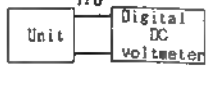
Step	AM SG output	Tuning frequency	Output indicator	Adjustment point	Adjust for
1		530kHz	Digital DC voltmeter	OSC coil on RF block L151	1.2±0.1V
2	600kHz 400Hz, 30% mod. 60dB/m	600kHz	AC voltmeter	RF coil on RF block L151	Maximum
3	990kHz 400Hz, 30% mod. 60dB/m	990kHz	AC voltmeter	L152	Maximum

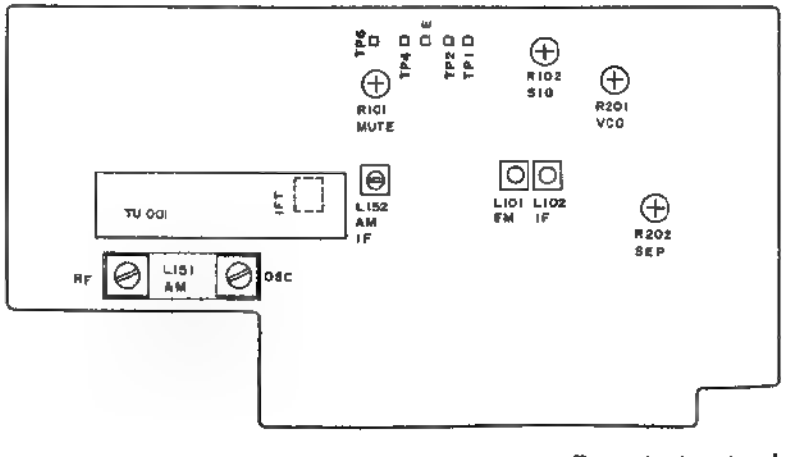
Reference Specifications
FM tuned voltage: 87.5MHz – 108.00MHz
1.6±0.4V – 8.0±0.4V
AM tuned voltage: 530kHz 1.2±0.5V
1710kHz 7.0±0.5V
Auto stop level: AM: Less than 65dB/m
FM: Less than 16dB/μ



<AM instrument connection>

Confirmation of tuned voltage

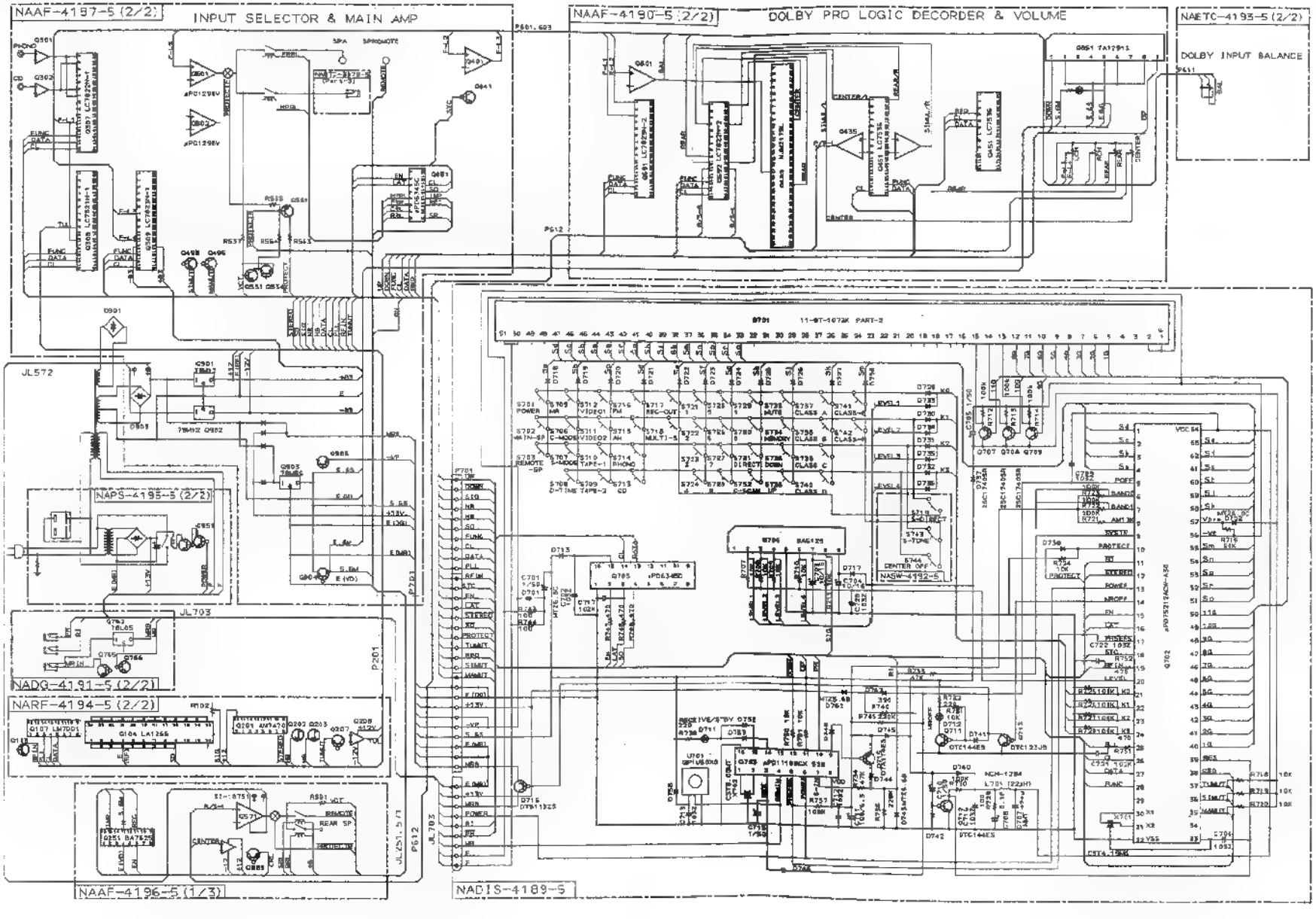




Tuner circuit pc board

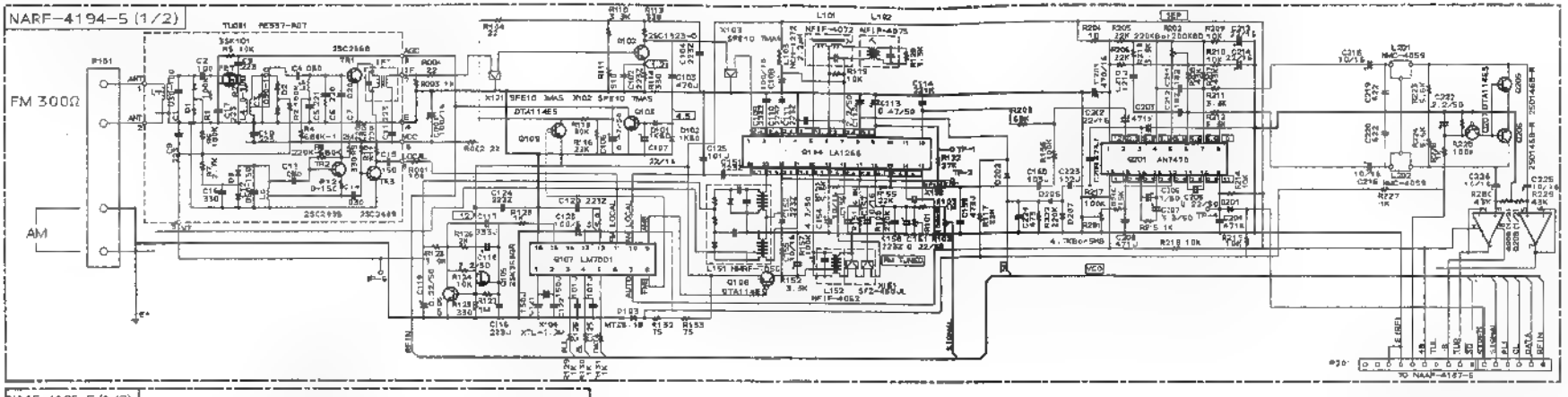
SCHEMATIC DIAGRAM

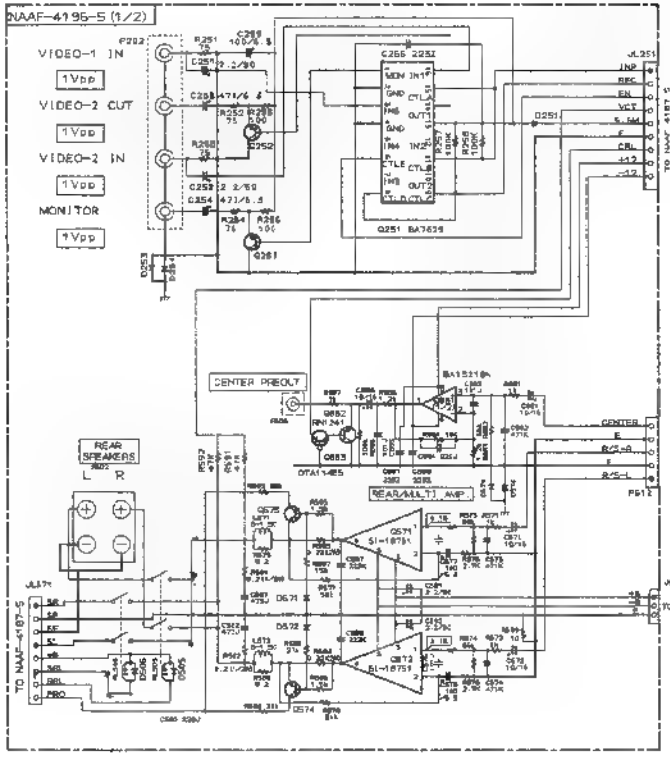
CONNECTION DIAGRAM OF MICROPROCESSOR

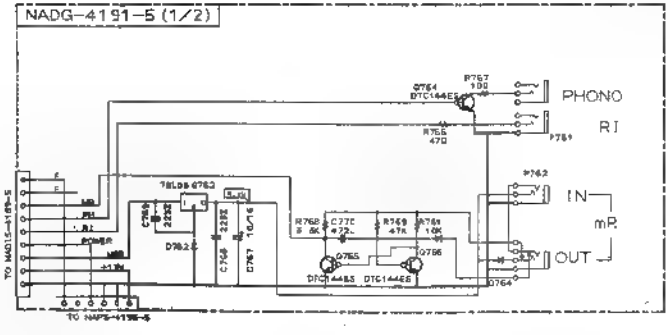


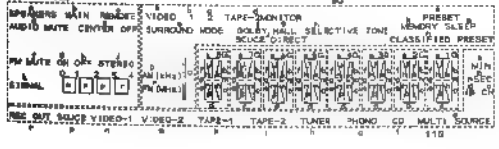
SCHEMATIC DIAGRAM

TUNER AND VIDEO SECTION



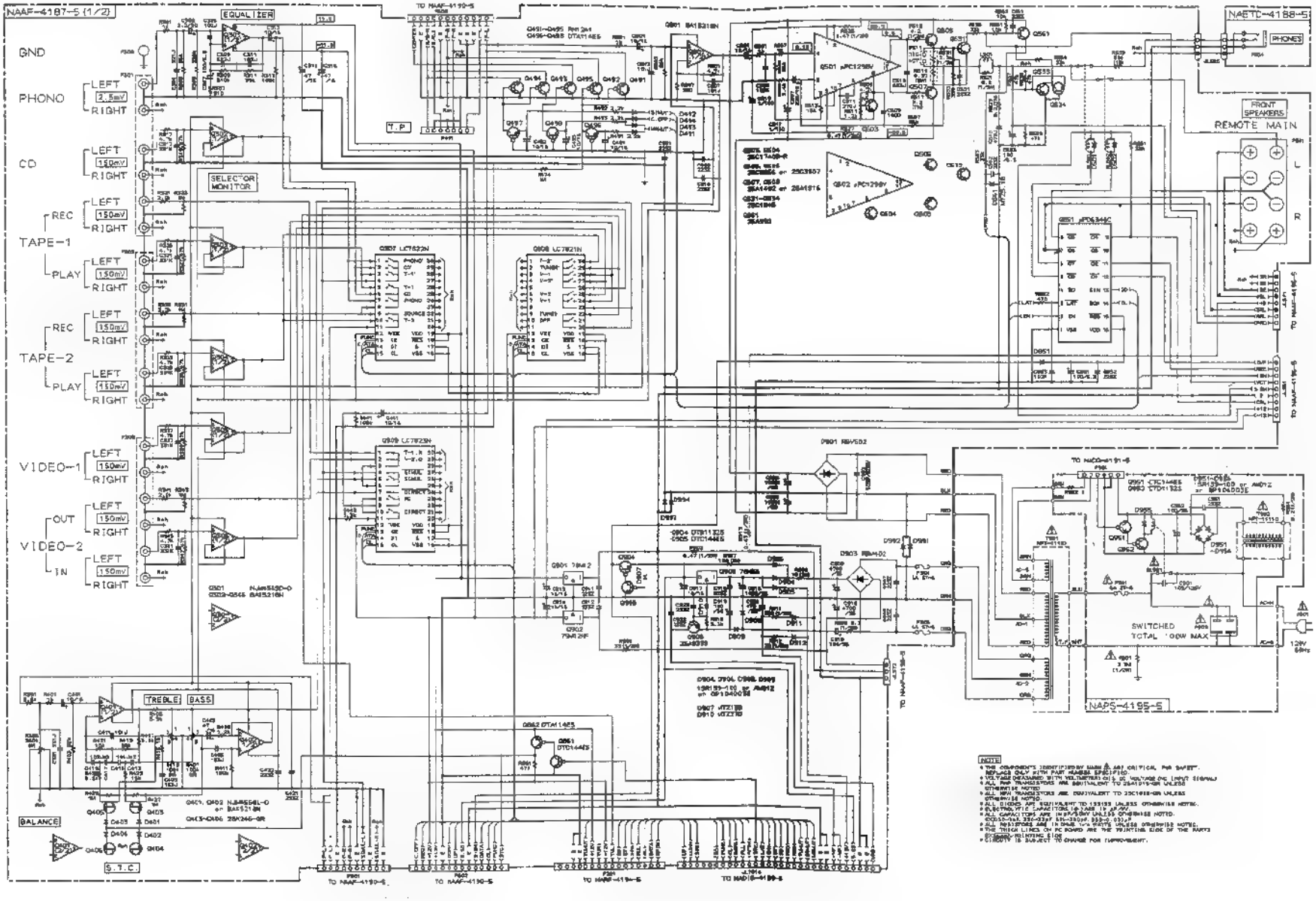






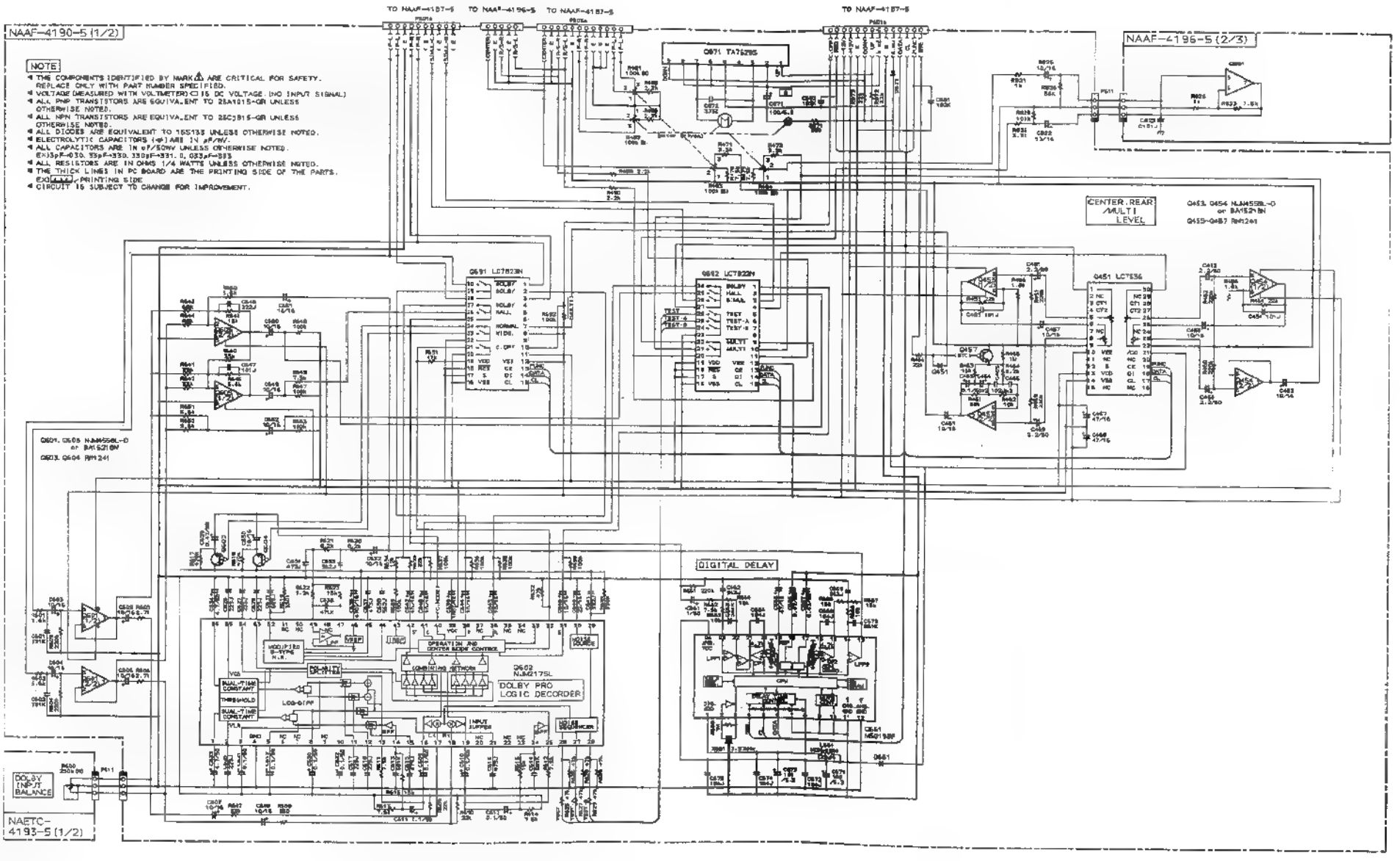
SCHEMATIC DIAGRAM

AUDIO SECTION



SCHEMATIC DIAGRAM

SURROUND SECTION



PRINTED CIRCUIT BOARD PARTS LIST

CAUTION:
Replacement for transistor of mark ☆, if necessary must be made from the same beta group (HFE) as the original type.

SELECTOR AND POWER AMPLIFIER PC BOARD (NAAF-4187-5)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q301	22240191	NJM4565D-D
Q302-Q306	22240247	BA15218N
Q307	22240270	LC7822N
Q308	22240280	LC7821N
Q309	22240339	LC7823N
Q401,Q402	22240247 or	BA15218N or
	22240293	NJM4558L-D
Q501,Q502	22240311	μPC1298V
Q801	22240247	BA15218N
Q851	22240211	μPD6345C
Q901	222780122NEC	78M12
Q902	222790125	79M12
Q903	222780565JRC	78M56
	Transistors	
Q403-Q406	2211945	2SK246-GR
Q491-Q495	2213631 or	RN1241-A or
	2213632	RN1241-B
Q496-Q498	2213510	DTA114ES
Q503,Q504	2213284	2SC1740S-R
Q505,Q506	2201653,	☆ 2SC3856-O,
	2201654,	☆ 2SC3856-Y,
	2201655,	☆ 2SC3856-P,
	2202272 or	☆ 2SC3907-R or
	2202273	☆ 2SC3907-O
Q507,Q508	2201663,	☆ 2SA1492-O,
	2201664,	☆ 2SA1492-Y,
	2201665,	☆ 2SA1492-O,
	2202262 or	☆ 2SA1516-R or
	2202263	☆ 2SA1516-O
Q531-Q534	2211732 or	2SC1845-F or
	2211733	2SC1845-E
Q561	2211792 or	2SA992-F or
	2211793	2SA992-E
Q861,Q905	221282	DTC144ES
Q862	2213510	DTA114ES
Q904	2213830	DTB113ZS
Q906	2213354	2SA933S-R
	Diodes	
D401-D404	223163 or	1SS133 or
D491-D494	223205	1SS270A
D501,D502	223163 or	1SS133 or
D851,D905	223205	1SS270A
D561	224450512	MTZ5.1B
D901	22380038	RBV602
D903	22380048	RBA402
D904,D906	22380032,	1SR139-100,
D908,D909	22380035 or	GP104003E or
	22380046	AM01Z
D907	224451302	MTZ13B
D910	224452704	MTD27D
D911,D912	223163 or	1SS133 or
D991-D994	223205	1SS270A
	Coils	
L501,L502	231176	S-1.3C
	Capacitors	
C303,C304	354780229	2.2μF,50V,Elect.
C307,C308	354721019	100μF,6.3V,Elect.
C309,C310	374726224	6200pF±5%,50V,Plastic
C311,C312	374721824	1800pF±5%,50V,Plastic
C313,C314	354761009	10μF,35V,Elect.
C315,C316	354744709	47μF,16V,Elect.
C401,C402	354761009	10μF,35V,Elect.
C403,C404	354744709	47μF,16V,Elect.
C405,C406	374721534	0.015μF±5%,50V,Plastic
C409,C410	374721534	0.015μF±5%,50V,Plastic
C413-C416	374721044	0.1μF±5%,50V,Plastic
C417-C420	374721024	1000pF±5%,50V,Plastic
C441,C442	354761009	10μF,35V,Elect.
C491-C493	354761009	10μF,35V,Elect.
C501,C502	354761009	10μF,35V,Elect.
C507,C508	354742219	220μF,16V,Elect.
C513,C514	374726834	0.068μF±5%,50V,Plastic
C515,C516	374724734	0.047μF±5%,50V,Plastic
C517-C520	354700109	1μF,160V,Elect.
C533,C851	354721019	100μF,6.3V,Elect.
C801,C802	354761009	10μF,35V,Elect.
C905,C906	3504245	8200μF,50V,Elect.
C909,C910	3504213	4700μF,35V,Elect.
C913,C914	354761009	10μF,35V,Elect.
C915	354751029	1000μF,25V,Elect.
C917	354761009	10μF,35V,Elect.
C918	354761019	100μF,35V,Elect.
C919	354781019	100μF,50V,Elect.
C921	354754719	470μF,25V,Elect.
	Resistors	
R393	5104225	N11RGLC250KWT22Z,Variable,Balance
R407,R408	5104230	N14RLC100KWT22Z,Variable,Bass
R413,R414	5104230	N14RLC100KWT22Z,Variable,Treble
R509,R510	5210261	N06HR5KBC,Semi-fixed
R515,R516	442520824	8.2Ω ±5%,1/2W,Metal oxide film
R517,R518	441620824	8.2Ω ±5%,1W,Metal oxide film
R519,R520	4500031	0.22Ω,5W,Metal plate
R521,R522	442520824	8.2Ω ±5%,1/2W,Metal oxide film
R523,R524	441620824	8.2Ω ±5%,1W,Metal oxide film
R525-R528	442524794	0.47Ω ±5%,1/2W,Metal oxide film
R529,R530	441623914	390Ω ±5%,1W,Metal oxide film
R531,R532	442522224	2.2kΩ ±5%,1/2W,Metal oxide film
R902	441524794	0.47Ω ±5%,1/2W,Metal oxide film
R903	442523304	33Ω ±5%,1/2W,Metal oxide film
R906	441721804	18Ω ±5%,2W,Metal oxide film
R907	441721514	150Ω ±5%,2W,Metal oxide film

NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

CIRCUIT NO.	PART NO.	DESCRIPTION
	Resistors	
R908	442524704	47Ω ±5%,1/2W,Metal oxide film
R911	442523314	330Ω ±5%,1/2W,Metal oxide film
R912	442522204	22Ω ±5%,1/2W,Metal oxide film
R913	442524794	0.47Ω ±5%,1/2W,Metal oxide film
	Relaies	
RL501	25065396	NRL-2P1.25A-DC24-067
RL502	25065339	NRL-2P5A-DC24-046
	Terminals	
P301-P303	25045300	NPJ-6PDBL159
P501	25060159	NTM-8PDMN085
	Plugs	
P201	25055502	NPLG-16P477
P491	25055583	NPLG-7P554
P511,P512	25055493	NPLG-2P468
P601	25055499	NPLG-10P474
P602	25055501	NPLG-14P476
P603	25055500	NPLG-12P475
	Socket	
JL701a	25050727	NSCT-30P531
	Fuses	
F904,F905	252051	⚠ 6A ST-6
	Fuseholders	
F904a,F905a	250113	⚠ SN5051
	Clamp	
P991	260224	CP-1S

HEADPHONE TERMINAL PC BOARD (NAETC-4188-5)

CIRCUIT NO.	PART NO.	DESCRIPTION
P504	25045255	YKB21-5009,Terminal,headphone

DISPLAY CIRCUIT PC BOARD (NADIS-4189-5)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q702	22240624	μPD75212ACW-A30
Q703	22240466	μPD17103CX-531
Q705	22240211	μPD6345C
Q706	22240341	BA6125
	FL tube	
Q701	212115	11-BT-107GK
	Transistors	
Q707-Q709	2213284	2SC1740S-R
Q711,Q712	221282	DTC144ES
Q713	2213640	DTC123JS
Q715	2213510	DTA114ES
Q716	2213830	DTB113ZS
	Opto. receiving module	
U701	24130007	GP1U571X
	Diodes	
D701,D702	224450623	MTZ6.2C
D713,D714	223163 or	1SS133 or
D717-D738	223205	1SS270A
D740-D742	223163 or	1SS133 or
D744-D748	223205	1SS270A
D743,D762	224450562	MTZ5.6B
D752-D754	223163 or	1SS133 or
D758	223205	1SS270A
	L.E.Ds	
D711,D712	225142	SEL2913K
	Coil	
L701	233411K220	NCH-1387
	Ceramic oscillators	
X701	3010163	CST4.19MGW
X702	3010154 or	CST8.00MT or
	3010190	CST8.00MTW
	Capacitors	
C701	353780109	1μF,50V,Elect.
C703,C704	353741009	10μF,16V,Elect.
C705	353780109	1μF,50V,Elect.
C707	375524744	0.47μF±5%,50V,Plastic
C708	3000057	0.1F,5.5V,Super
C710	353780109	1μF,50V,Elect.
C711	353721019	100μF,6.3V,Elect.
C715	353780109	1μF,50V,Elect.
	Switches	
S701-S703	25035548	NPS-111-S510
S705-S718	25035548	NPS-111-S510
S721-S742	25035548	NPS-111-S510
	Socket	
JL701b	25050728	NSCT-30P532
	Plug	
P702b	25055512	NPLG-5P487
	Holders	
Q702a	27190842	LED 9
D711a	27190843	LED 1

VOLUME CIRCUIT PC BOARD(NAAF-4190-5)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q451	22240468	LC7536
Q453,Q454	22240247 or	BA15218N or
Q601,Q605	22240293	NJM4558L-D
Q602	22240458	NJM2175L
Q661	22240370	M50198P
Q691	22240339	LC7823N
Q692	22240270	LC7822N
Q871	22240239	TA7291S
	Transistors	
Q457,Q603	2213631 or	RN1241-A or
Q604	2213632	RN1241-B
	Diodes	
D451,D661	223163 or	1SS133 or
D662,D871	223205	1SS270A

NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

CIRCUIT NO.	PART NO.	DESCRIPTION
	Ceramic oscillator	
X661	3010169	CST3.27MGW002
	Coil	
L661	233411K220	NCH-1387
	Capacitors	
C451,C452	354780229	2.2 μ F,50V,Elect.
C457,C458	354761009	10 μ F,35V,Elect.
C459,C460	354780229	2.2 μ F,50V,Elect.
C461,C462	354761009	10 μ F,35V,Elect.
C463,C464	354781099	0.1 μ F,50V,Elect.
C465,C466	374721024	1000pF±5%,50V,Plastic
C467,C468	354744709	47 μ F,16V,Elect.
C603-C608	354761009	10 μ F,35V,Elect.
C609-C612	354781099	0.1 μ F,50V,Elect.
C615,C616	374724734	0.047 μ F±5%,50V,Plastic
C617,C618	374722234	0.022 μ F±5%,50V,Plastic
C619-C622	354781099	0.1 μ F,50V,Elect.
C623,C624	354780479	4.7 μ F,50V,Elect.
C625-C629	353782299	0.22 μ F,50V,Elect.
C630,C632	354761009	10 μ F,35V,Elect.
C631	354786899	0.68 μ F,50V,Elect.
C635,C648	374722224	2200pF±5%,50V,Plastic
C636	354724719	470 μ F,6.3V,Elect.
C637	374724734	0.047 μ F±5%,50V,Plastic
C638	374725624	5600pF±5%,50V,Plastic
C639	354742219	220 μ F,16V,Elect.
C640	354761009	10 μ F,35V,Elect.
C641	374723324	3300pF±5%,50V,Plastic
C642-C646	354761009	10 μ F,35V,Elect.
C649-C652	354761009	10 μ F,35V,Elect.
C661	354780109	1 μ F,50V,Elect.
C662,C669	374725624	5600pF±5%,50V,Plastic
C664,C668	374721044	0.1 μ F±5%,50V,Plastic
C665	354744709	47 μ F,16V,Elect.
C666,C667	354784799	0.47 μ F,50V,Elect.
C671,C673	354721019	100 μ F,6.3V,Elect.
C672,C674	374721044	0.1 μ F±5%,50V,Plastic
C675	375524744	0.47 μ F±5%,50V,Plastic
C821,C822	354761009	10 μ F,35V,Elect.
C871	354721019	100 μ F,6.3V,Elect.
	Resistor	
R481-R484	5144014A	N16RQL100KBT25F,Variable
	Sockets	
P611	2000556	NSAS-6P512
P612	2009990024	NSAS-10P0048
P601a	25050446	NSCT-10P270
P602a	25050448	NSCT-14P272
P603a	25050447	NSCT-12P271

RI/MR TERMINAL PC BOARD (NADG-4191-5)

CIRCUIT NO.	PART NO.	DESCRIPTION
	IC	
Q762	222780053	78L05
	Transistors	
Q764-Q766	221282	DTC144ES
	Diodes	
D761,D762	223163 or	1SS133 or
D764,D765	223205	1SS270A
	Capacitors	
C767	354761009	10 μ F,35V,Elect.
C770	374724724	4700pF±5%,50V,Plastic
	Terminals	
P761	25045172	HSJ-1003-01-020
P762	25045293	HSJ-1003-01-012
	Socket	
P951a	25050444	NSCT-6P268

OPERATION SWITCH PC BOARD (NASW-4192-5)

CIRCUIT NO.	PART NO.	DESCRIPTION
S719,S743	25035548	NPS-111-S510,Switches
S744	25035548	NPS-111-S510,Switch
P702	25050456	NSCT-5P280,Socket

INPUT BALANCE VOLUME PC BOARD (NAETC-4193-5)

CIRCUIT NO.	PART NO.	DESCRIPTION
R600	5104258	N11RGLC250KWT15Z,Variable resistor

TUNER CIRCUIT PC BOARD (NARF-4194-5)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Front end	
TU001	240088	FE337-A07
	ICs	
Q104	22240039	LA1266
Q107	22240090	LM7001
Q201	22240242	AN7470
Q208	22240247 or	BA15218N or
	22240293	NJM4558L-D
	Transistors	
Q102	2211723	2SC1923-O
Q103,Q106	2213284	2SC1740S-R
Q105	2212445	2SK365-GR
Q108,Q109	2213510	DTA114ES
Q205,Q206	2212794	2SD1468-R
Q207	2213510	DTA114ES
	Diodes	
D101,D102	223132	1K60
D103	224450512	MTZ5.1B
D201,D202	223163 or	1SS133 or
D206,D207	223205	1SS270A
	Crystal oscillator	
X104	3010158 or	XTL-7.2M
	3010141	

NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

CIRCUIT NO.	PART NO.	DESCRIPTION
	Coils and transformers	
L101	233401	NFIF-4072
L102	233402	NFIF-4073
L103	233411M022	NCH-1375
L151	232148	NMRF-7050
L152	232139	NMIF-4062
L201,L202	233355A	NMC-4059
	Ceramic filters	
X101,X103	3010071	SFE10.7MA5(RED)
X151	3010123	SFZ-450JL
X152	3010076	BFU-450C
	Capacitors	
C001,C108	354741019	100 μ F,16V,Elect.
C106	354784799	0.47 μ F,50V,Elect.
C107	354742209	22 μ F,16V,Elect.
C112	354780229	2.2 μ F,50V,Elect.
C113	354784799	0.47 μ F,50V,Elect.
C116	374722234	0.022 μ F±5%,50V,Plastic
C117	374723334	0.033 μ F±5%,50V,Plastic
C118	354780229	2.2 μ F,50V,Elect.
C119	353782299	0.22 μ F,50V,Elect.
C123	354721019	100 μ F,6.3V,Elect.
C124	354741019	100 μ F,16V,Elect.
C154	354780479	4.7 μ F,50V,Elect.
C155-C157	354761009	10 μ F,35V,Elect.
C159	374724734	0.047 μ F±5%,50V,Plastic
C160	374721034	0.01 μ F±5%,50V,Plastic
C161	353782299	0.22 μ F,50V,Elect.
C201	354744719	470 μ F,16V,Elect.
C202	354742209	22 μ F,16V,Elect.
C205	353782299	0.22 μ F,50V,Elect.
C206	354780109	1 μ F,50V,Elect.
C207	354780339	3.3 μ F,50V,Elect.
C208	370134714	470pF±5%,100V,Plastic
C209	374724734	0.047 μ F±5%,50V,Plastic
C211,C212	374721824	1800pF±5%,50V,Plastic
C213,C214	354742209	22 μ F,16V,Elect.
C215,C216	354761009	10 μ F,35V,Elect.
C219,C220	374726224	6200pF±5%,50V,Plastic
C222	354780229	2.2 μ F,50V,Elect.
C223	374721024	1000pF±5%,50V,Plastic
C224	374724734	0.047 μ F±5%,50V,Plastic
C225,C226	354761009	10 μ F,35V,Elect.
	Resistors	
R101	5210266	N06HR 100KBC,Semi-fixed
R102,R202	5210267	N06HR 200KBC,Semi-fixed
R201	5210261	N06HR 5KBC,Semi-fixed
	Terminal	
P101	25060160	NTM-4PDMN086
	Socket	
P201	25050449	NSCT-16P273

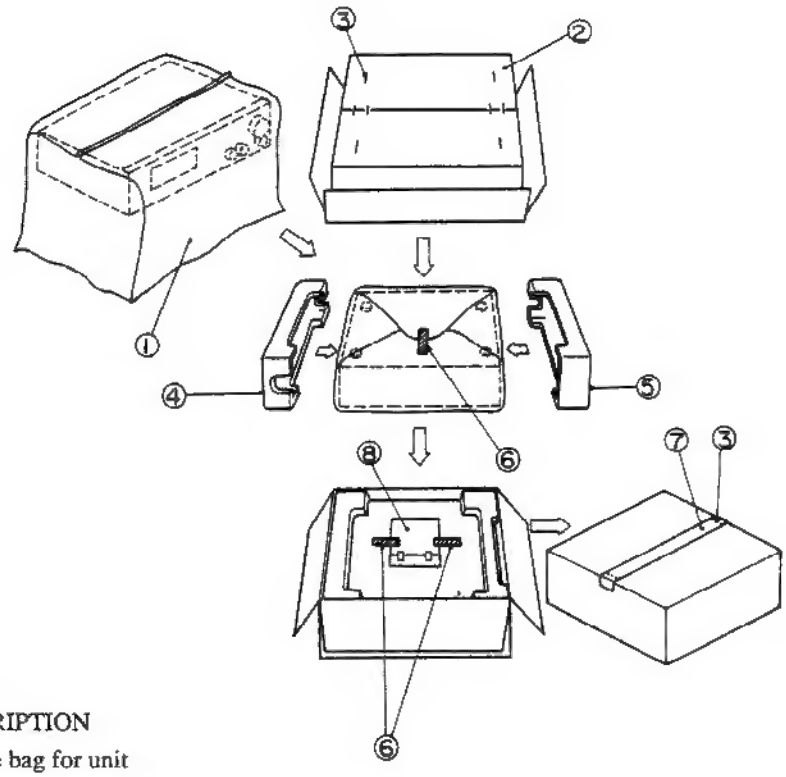
POWER SUPPLY CIRCUIT PC BOARD (NAPS-4195-5)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistors	
Q951	221282	DTC144ES
Q952	2213650	DTD113ZS
	Diodes	
D951-D954	22380032, 22380035 or 22380046	1SR139-100, GP104003E or AM01Z
D955	223163 or	1SS133 or
D995,D996	223205	1SS270A
	Power transformer	
T902	2300670	⚠ NPT-1111D
	Capacitors	
C901	3500065A	⚠ DE7150FZ103PAC400V/125V,IS
C952	354761019	100 μ F,35V,Elect.
	Resistors	
R901	431523355	⚠ 3.3MΩ ±20%,1/2W,Solid
R951	442520824	8.2Ω ±5%,1/2W,Metal oxide film
	AC outlet	
P902	25050409	⚠ NSCT-4P234
	Relay	
RL901	25065248	⚠ NRL-1P15A-DC12-29
	Fuse	
F901	252051	⚠ 6A ST-6 <D/W>
	Fuseholders	
F901a	250113	⚠ SN5051
	Plug	
P951	25055497	NPLG-6P472

VIDEO AND SUB AMPLIFIER PC BOARD (NAAF-4196-5)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q251	22240373	BA7625
Q571,Q572	22240467	SI-18751
Q881	22240247	BA15218N
	Transistors	
Q252,Q253	2213354	2SA933S-R
Q573,Q574	2211732 or	2SC1845-F or
	2211733	2SC1845-E
Q883	2213510	DTA114ES
Q884	2213631 or	RN1241-A or
	2213632	RN1241-B
	Diodes	
D251	223163 or	1SS133 or
D253,D254	223205	1SS270A
D505,D506	223163 or	1SS133 or
D571-D574	223205	1SS270A
	Coils	
L571,L572	231176	S-1.3C
	Capacitors	
C251,C252	354780229	2.2 μ F,50V,Elect.
C253,C254	354724719	470 μ F,6.3V,Elect.
C255	354721019	100 μ F,6.3V,Elect.
C571,C572	354761009	10 μ F,35V,Elect.
C577,C578	354741019	100 μ F,16V,Elect.
C581,C582	374724734	0.047 μ F$\pm$5%,50V,Plastic
C591,C592	354780229	2.2 μ F,50V,Elect.
C881,C886	354761009	10 μ F,35V,Elect.
	Resistors	
R581,R582	442520824	8.2 Ω $\pm$5%,1/2W,Metal oxide film
R583,R584	4000059	0.22 Ω,2W,Metal plate
	Relaies	
RL505,RL506	25065339	NRL-2P5A-DC24-046
	Terminal	
P251	25045339	NPJ-4PDYE190
P502	25060161	NTM-4PDML087
P506	25045302	NPJ-1PDBL161
	Plug	
P612a	25055135	NPLG-5P119
	Sockets	
JL251	25050273	NSCT-9P101
JL571	25050272	NSCT-8P100
JL572,JL605	25050267	NSCT-3P95

PACKING VIEW



REF.NO.	PART NO.	DESCRIPTION
1	29100034A	Styrene bag for unit
2	29052441Y	Master carton box
3	282301	Sealing hook
4	29091449B	Pad R
5	29091448B	Pad L
6	261504	Adhesive tape
7	29110071	Damplon tape
8	Accessary bag ass'y	
	29341755AY	Instruction manual
	29341756Y	Instruction manual <C>
	292111	FM antenna
	232140	NMA-3057,AM loop antenna
	2010200	Connection cord
	3010054	UM-3,Two batteries
	24140237Y	RC-237S,Remote control transmitter
	29365019A	Warranty card <N>
	29358002J	Service station list <N>
	29100097	Styrene bag for accessary

NOTE: <N>:U.S.A. model
<C>:Canadian model

ONKYO CORPORATION

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